Study of the Caribbean Tourism Destinations' Competitiveness Through Composite Indicators

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To my wife, Daiana, my parents, and my sister

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RESUMEN

El turismo se considera un importante impulsor del crecimiento y el desarrollo económico, tanto para los países desarrollados como para los países en vías de desarrollo. Por ello, el número de nuevos productos y mercados turísticos mantiene una tendencia creciente en todo el mundo y, por consiguiente, la competencia entre destinos turísticos para atraer cada vez más visitantes e inversores también va en aumento. Como resultado, la competitividad de los destinos turísticos se ha convertido en un tema principal y su importancia ha intensificado el debate sobre su definición y herramientas de medición.

En este sentido, la presente investigación tiene como objetivo proponer nuevas herramientas para medir la competitividad de los destinos turísticos de la región del Caribe, que es una de las regiones de mayor intensidad turística y de las más dependientes del turismo a nivel mundial. Para ello, se presentan diversos estudios con propuestas de indicadores compuestos para medir este fenómeno. Estas técnicas se basan en procedimientos que buscan garantizar el mayor poder explicativo de las medidas globales propuestas. Además, intentan superar los aspectos criticados al Índice de Competitividad de Viajes y Turismo del Foro Económico Mundial.

Los estudios propuestos analizan la competitividad turística desde dos perspectivas y proponen medidas estáticas y dinámicas para ello. Se consideran 33 destinos, casi el doble de los países de la región incluidos en las ediciones del Índice de Competitividad de Viajes y Turismo. Además, se han empleado diversos conjuntos de indicadores. Los resultados de las medidas estáticas demuestran la viabilidad de las metodologías propuestas para la medición de la competitividad de los destinos turísticos y su cercanía al Índice de Competitividad de Viajes y Turismo.

Los métodos propuestos permiten utilizar toda la información proporcionada por el Foro Económico Mundial. Además, se puede emplear menos información para alcanzar resultados cercanos a los proporcionados por el ranking Global Internacional. Este es un hallazgo importante que puede llevar a la inclusión de un mayor número de países en el Índice de Competitividad de Viajes y Turismo. Los métodos dinámicos desarrollados logran resultados consistentes con las predicciones del Consejo Mundial de Viajes y Turismo. El análisis incluye toda la información disponible en un período de tiempo determinado y, por tanto, los valores intermedios influyen en los resultados. Además, el indicador dinámico proporciona una información detallada sobre el cambio del nivel de competitividad en el tiempo para un destino turístico y permite determinar si la variación es debida a una mejora de su desempeño o por cambios relativos a cuestiones externas.

ABSTRACT

Tourism is frequently viewed as an important engine for the economic growth and development for both, developed and developing countries. Consequently, the number of new tourist products and markets is constantly rising worldwide. Therefore, the competence among tourism destinations in attracting more visitors and investors is also on the rise. As a result, tourism destination competitiveness has become a principal topic in the field of tourism research and its importance has augmented the debate regarding its definition and measurement tools.

In this respect, the present research aims to propose new feasible and reliable tools to measure the competitiveness of the tourism destinations of the Caribbean region, which is one of the most intensely and tourism-dependent regions worldwide. To this end, a variety of studies are presented towards the proposal of composite indicators to measure this phenomenon. Certain comprised techniques are based on mathematical procedures that strive to guarantee the higher explanatory power of the global measures proposed. Furthermore, they attempt to overcome those aspects that have been criticised of the Travel and Tourism Competitiveness Index of the World Economic Forum.

The present studies analysed tourism competitiveness from either two perspectives, and propose static and dynamic measures A total of 33 destinations are included, almost twice the number of countries from the region included within the editions of the Travel and Tourism Competitiveness Report. Furthermore, diverse sets of indicators have been employed.

The results of the static measures demonstrate the feasibility of the proposed methodologies the measurement of tourism destination competitiveness and its closeness to the World Travel and Tourism Competitiveness Index. First, the proposed methods enable all the information provided by the World Economic Forum to be utilized. Additionally, less information can be employed to attain results close to those provided by the Global International ranking. This is a major finding that may lead to the inclusion of developing countries into the Travel and Tourism Competitiveness Index. The dynamic methods developed herein attain outputs consistent with the predictions of the World Travel and Tourism Council. The analysis comprised all the available information within a given time span and, therefore, the intermediate scores influenced the results. Moreover, the dynamic indicator provides a detailed information regarding the change in competitiveness over time of a tourism destination and enables the cause of the improvement in the level of competitiveness to be determined, whether it be due to internal improvement of its performance or to changes relative to external issues.

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INTRODUCTION (in Spanish)

El turismo es reconocido a nivel global como una de las actividades económicas de mayor crecimiento, al punto en que se ha convertido, para muchos países, en un sector primordial, al igual que otros sectores que tradicionalmente han sido fundamentales en su desarrollo económico (Mendola & Volo, 2017). Esta notoriedad ha venido acompañada de una diversificación cada vez mayor, reflejada en el surgimiento de nuevos destinos que compiten con los ya tradicionalmente establecidos (Lee, 2015).

Adicionalmente, de acuerdo con las estimaciones hasta finales de 2019 (UNWTO, 2020), este crecimiento del turismo se esperaba que continuase en los próximos años consolidándose como un sector con un fuerte dinamismo económico, proporcionando empleo e inversión en infraestructura (UNWTO, 2016). No obstante, se espera que el proceso de recuperación consiga establecer a la industria del ocio nuevamente entre los primeros impulsores del desarrollo económico, como soporte a la salida de la actual crisis, pues históricamente la actividad turística ha jugado un rol fundamental en el desarrollo económico y social de muchos países, principalmente aquellos en vías de desarrollo (Joshi et al., 2017; Gómez-Vega & Picazo-Tadeo, 2019).

El turismo contribuye no solo al crecimiento económico, sino también a la globalización y a las relaciones comerciales internacionales. Además, constituye un impulsor significativo de la prosperidad y el desarrollo económico, sentido en el cual, los tomadores de decisiones deben ser conscientes y estar preocupados por los factores y recursos que fomentan la competitividad global de sus destinos turísticos (Mei et al., 2012; Wu et al., 2012).

A pesar del retroceso económico experimentado por la crisis económica mundial 2007-2009 y más recientemente por el COVID-19, el sector de los viajes y turismo se ha mantenido creciendo globalmente (WEF, 2015) y ello se reflejó en los resultados del año 2019, record para el turismo internacional, Según la Organización Mundial del Turismo (*United Nations World Tourism Organization*, UNWTO). A nivel mundial los destinos recibieron 1.5 millones de turistas internacionales, con un crecimiento del 4% en 2919. Este fue otro año importante, a pesar del crecimiento reportado, menor que los valores excepcionales de 2017 (+7%) (UNWTO, 2018) y 2018 (+6%) (UNWTO, 2019, 2020). Aunque sin lugar a dudas, el crecimiento registrado en 2017 ha sido el mayor aumento desde la crisis económica mundial de 2009, muy por encima de la previsión a largo plazo de la UNWTO de 3,8% al año para el periodo de 2010 a 2020 (UNWTO, 2018).

El Consejo Mundial de Viajes y Turismo (*World Travel & Tourism Council*, WTTC) estima que el sector contabilizó el 10.4% del Producto Interno Bruto Mundial (8.8 trillones de dólares). Además, la industria del ocio sigue desempeñando un papel fundamental como impulsor del crecimiento económico y generador de empleo, con 319 millones de empleados, lo que representa uno de cada 10 empleados a nivel mundial (WTTC, 2019).

Por su capacidad para el impulso del desarrollo en diferentes países y la ayuda al incremento del bienestar económico de las poblaciones locales, muchas regiones optan por posicionar los recursos públicos en función de la atracción de más visitantes con el fin de aumentar su competitividad con respecto a otros destinos (Tang & Tang, 2013; Webster & Ivanov, 2014) y, por consiguiente, beneficiarse del desarrollo de esta actividad.

Diversos países en todo el mundo apuestan por la mejora en el sector turístico para contribuir con su desarrollo económico y social. Es por ello que el número de destinos turísticos se ha mantenido en ascenso globalmente. Al mismo tiempo, la cantidad de mercados emisores también ha aumentado, pero en menor grado. Esta asimetría ha provocado la existencia de una ruda competencia en el mercado turístico internacional, que se ha mantenido en constante ascenso (Drakulić Kovačević et al., 2018).

Como resultado, la competitividad turística se ha vuelto extremadamente importante, especialmente si cada vez más economías se están apoyando en esta actividad. Por tal motivo, no es sorprendente que la competencia entre destinos turísticos se haya vuelto tan relevante (Croes, 2011). Como consecuencia, este constituye uno de los principales temas de investigación en la rama (Dwyer & Kim, 2003; Ritchie & Crouch, 2003; Crouch & Ritchie, 2005; Claver-Cortés et al., 2007; Mazanec et al., 2007; Gomezelj & Mihalic, 2008; Hong, 2009; Bolaky, 2011; Mazanec & Ring, 2011; Botti & Peypoch, 2013; Croes & Kubickova, 2013; Parra-López & Oreja-Rodríguez, 2014; Knežević et al., 2016; Pulido-Fernández & Rodríguez-Díaz, 2016; Goffi & Cucculelli, 2018; de la Peña et al., 2019; Gómez-Vega & Picazo-Tadeo, 2019; Croes et al., 2020; Kubickova & Martin, 2020; Neto et al., 2020; Rodríguez-Díaz & Pulido-Fernández, 2020; Salinas Fernández et al., 2020). Su importancia, el análisis de sus determinantes y las discusiones referentes a su medición han sido ampliamente reconocidos y abordados en diversos estudios (Gooroochurn & Sugiyarto, 2005; Mazanec & Ring, 2011; Komppula, 2014).

Dada su reconocida importancia, en la literatura se registran diversas definiciones de competitividad turística; sin embargo, parece ser que aún no existe un término generalmente

aceptado para este fenómeno (Dimoska & Trimcev, 2012; Croes & Semrad, 2018; Hanafiah & Zulkifly, 2019). De acuerdo con varios autores, este es un concepto relativo y multidimensional. Por relativo se refieren a la relevancia de las localidades que compiten; esto es, la importancia de establecer qué destinos conforman el conjunto de competidores (Crouch & Ritchie, 2005). La multidimensionalidad se circunscribe a los atributos sobresalientes o las cualidades de la competencia (Komppula, 2014) y ha sido abordada en estudios recientes (Goffi & Cucculelli, 2018; Goffi et al., 2019).

Adicionalmente, existen estudios de competitividad limitados a un solo destino y, a pesar de sus importantes méritos, este enfoque restringe las posibilidades de comparación. Para los gobiernos y los operadores turísticos, si bien resulta importante conocer el nivel de competitividad de su industria turística, de forma general; más importante aún es evaluar su comportamiento a nivel global, regional o, al menos, con respecto a sus mayores competidores (WEF, 2009; Assaf, 2012). En ese sentido, la creación de rankings de competitividad turística también ha mantenido una tendencia creciente, dadas las posibilidades de comparación necesarias para la toma de decisiones (Enright & Newton, 2005; Gooroochurn & Sugiyarto, 2005; Botti et al., 2009; WEF, 2009; Croes, 2011; Botti & Peypoch, 2013; Croes & Kubickova, 2013; Parra-López & Oreja-Rodríguez, 2014; Pulido-Fernández & Rodríguez-Díaz, 2016; WEF, 2017; Drakulić Kovačević et al., 2018; González et al., 2018; de la Peña et al., 2019; Gómez-Vega & Picazo-Tadeo, 2019).

En lo referente a su medición, se debe hacer notar que no resulta una tarea fácil, particularmente porque cada destino puede tener diferentes tradiciones, historia, recursos naturales y culturales, así como objetivos diferentes, y medios para alcanzarlos (Bãlan et al., 2009) que resultan difíciles de cuantificar. Además, influyen otros aspectos como el número de indicadores, la forma de agruparlos conceptualmente, su medición y agregación. En ese mismo orden, el conjunto de destinos considerados como competidores y sus tamaños, son otras de las cuestiones que inciden en su medición. Como parte de las aportaciones en este sentido, distintos autores han creado o adoptado diferentes modelos para medir la competitividad turística.

Entre los modelos más significativos aparece el Modelo Conceptual de Competitividad de los Destinos (Crouch & Ritchie, 1999). Este es el más riguroso y comprensible en la actualidad y constituye, sin dudas, el más referenciado en el tema (Parra-López & Oreja-Rodríguez, 2014; Hanafiah & Zulkifly, 2019). Existen otros basados en las cinco fuerzas de Porter, estudios que capturan la percepción de imagen del destino por parte de los consumidores y modelos basados en la competitividad de los precios, etc.

El Modelo Integrado de Competitividad de los Destinos de Dwyer y Kim (2003), establecido a partir del modelo de Ritchie y Crouch (1999), el Modelo propuesto por Gooroochurn y Sugiyarto (2005) y, más recientemente, el modelo de Croes y Semrad (2018). Existen otros modelos, pero de menor relevancia. Todo ello verifica la afirmación de que la literatura no ha llegado a consenso en cuanto a la medida más apropiada de competitividad turística (Jackman et al., 2011).

El modelo de Ritchie y Crouch (1999; 2003) combina las ventas comparativas y competitivas en la consecución de la competitividad de los destinos turísticos y ofrece un listado exhaustivo de determinantes e indicadores de la competitividad turística. Por su parte, Dwyer y Kim (2003) reconocen explícitamente las condiciones de la demanda como un determinante de la competitividad de los destinos y queda manifiesto que la competitividad no es un fin para la toma de decisiones, sino una meta intermedia para la obtención de la prosperidad económica, tanto local como regional. Otros autores, como Gooroochurn y Sugiyarto (2005), junto con la agrupación conceptual de los indicadores, ofrecen un índice de competitividad turística.

Además, se propone emplear el enfoque analítico para analizar la competitividad de los destinos turísticos; esto es, el empleo de indicadores. En ese sentido, algunos modelos plantean, implícitamente, una perspectiva no agregativa (Crouch & Ritchie, 1999; Dwyer & Kim, 2003; Croes & Semrad, 2018) o agregativa (Gooroochurn & Sugiyarto, 2005), que consiste en la creación de un índice de competitividad para el o los destinos.

De forma general, todos los modelos relacionados coinciden en la utilidad de los indicadores para realizar el proceso de medición. Por ello, a través de los años se han identificado conjuntos de indicadores básicos para analizar los aspectos particulares de este fenómeno, pero aún queda mucho por discutir con respecto al marco de medición de competitividad turística (Dupeyras & MacCallum, 2013). Si bien no se ha conseguido una definición o modelo de competitividad turística comúnmente aceptado, tampoco ha sido posible determinar el conjunto de indicadores que reúna todas las características que describen fielmente la competitividad de los destinos turísticos.

Como resultado del empleo de los indicadores, la competitividad turística se ha medido convencionalmente a través de índices. Algunos de estos índices requieren que los países recolecten datos empleando una gran cantidad de indicadores que incluyen precios y factores humanos, muchos de los cuales no mantienen una asociación directa con el grado de competitividad de los destinos (Mazanec et al., 2007; Croes, 2011; Croes & Kubickova, 2013).

A pesar de ello, dada su gran utilidad, en la literatura se registra la propuesta de una amplia variedad de indicadores e índices de competitividad turística (p. ej. Enright & Newton, 2004; Gooroochurn & Sugiyarto, 2005; Gomezelj & Mihalic, 2008; Croes, 2011; Croes & Kubickova, 2013; Evren & Kozak, 2018; Gómez-Vega & Picazo-Tadeo, 2019; WEF, 2015, 2017, 2019, entre otros). Los existentes han sido creados tomando las decisiones metodológicas que responden a las necesidades de los analistas y los usuarios finales y todos presentan sus ventajas e inconvenientes. Por consiguiente, ninguno es reconocido como el más acertado para este fin.

El Índice de Competitividad de los Viajes y Turismo (*Travel and Tourism Competitiveness Index* TTCI), desarrollado por el Foro Económico Mundial (*World Economic Forum*, WEF) es el más popular (Croes & Kubickova, 2013), cuya última edición en 2019 incluye 140 países y 90 indicadores. Sin embargo, existen regiones con poca representatividad en el índice, para las cuales el turismo constituye la principal fuente de ingresos. Tal es el caso de la región de Centro América y el Caribe, que comprende un conjunto de aproximadamente 39 países entre Estados Insulares (pequeños y medios) y Estados Continentales, casi todos dependientes del turismo, de los cuales solo 17 han sido incluidos, al menos una vez, en este ranking. Varios de estos, se han omitido de las últimas ediciones del TTCI, debido a la falta de información.

Para los destinos turísticos, la presencia en el TTCI es demostrativo de fortaleza. Además, representa la posibilidad de aportar información fiable concerniente el desempeño de su industria turística. Toda vez que un destino se ubica en una posición favorable en este ranking, puede volverse famoso y recibir mayor atención por parte de los tomadores de decisiones (Wu, 2011). Adicionalmente, ganaría en visibilidad a nivel internacional entre los turistas, que cada vez más emplean fuentes de información provenientes de organizaciones internacionales a la hora de seleccionar los destinos a visitar.

En la región del Caribe, el turismo sobresale como una de las principales alternativas de desarrollo. Principalmente para los pequeños estados insulares. En términos estadísticos, en 2017 las llegadas de turistas internacionales al Continente Americano aumentaron en un 5% con un incremento ligeramente menor en ingresos (1%). Dentro del área, América Central obtuvo resultados positivos en cuanto a llegadas casi en todos los destinos (+5%), mientras que el Caribe se vio afectado (+3%) por los huracanes que azotaron la zona entre agosto y septiembre de ese año. Ello se reflejó también en los resultados negativos de Centro América y El Caribe en 2018, ambos (-2%), por la misma afectación meteorológica de 2017. Los resultados fueron más bien variados, con un sólido crecimiento en algunos destinos como República Dominicana y Jamaica (UNWTO, 2018). En general, esta es una de las regiones

turísticas de mayor intensidad a nivel mundial (Erikson & Lawrence, 2008), a la vez que 11 de estos países se ubican entre los 30 de mayor dependencia del turismo a nivel internacional (Jackman et al., 2011; WTTC, 2018a).

En la bibliografía se registran escasos estudios que analizan la competitividad de los destinos turísticos del Caribe o que incluyen una muestra representativa de destinos de la región. Entre los ellos se pueden señalar a Bolaky (2011), Croes (2011), Jackman et al. (2011) y Croes y Kubickova (2013). Los estudios existentes, de conjunto, desarrollan un importante marco teórico y consiguen incluir hasta 32 destinos del área. Sin embargo, entre sus limitaciones aparece que la competitividad de los destinos se centra en un solo indicador o en los *outputs* de cada destino, sin considerar sus *inputs*. Otra de las restricciones se encuentra en que los indicadores incluidos no son de fácil obtención para la mayoría de los países en comparación.

Si se analizan los índices propuestos en estos estudios, se puede notar que algunos resultan difíciles de comprender por parte de los tomadores de decisiones, o bien el índice empleado informa acerca de la ventaja comparativa de los países, pero carece de poder explicativo. Además, en su mayoría, el enfoque estático es el empleado para medir la competitividad; esto es, que la competitividad se analiza para un determinado momento y no para un período de tiempo. Por ello, los estudios de la competitividad turística, vista como un enfoque dinámico, carecen en la región, como en la mayoría de los análisis de competitividad. Este es un enfoque más realista, puesto que propone analizar la competitividad a lo largo del tiempo, de modo que es posible identificar si las estrategias y acciones desarrolladas han contribuido a aumentar los niveles de competitividad de los destinos a lo largo del tiempo.

Adicionalmente, pocos de estos Estados del Caribe están inscritos en los Informes de Competitividad del WEF, principalmente debido a la falta de información, como se explicó anteriormente. En ese sentido, resulta necesaria la elaboración de un ranking local de competitividad turística para el área que incluya indicadores representativos de todas las aristas de este concepto. Además, que cuyos resultados guarden relación con los del WEF, de modo que sea posible obtener aproximaciones para aquellos países que no se encuentran incluidos en esta medida global de competitividad y sea aplicable a países para los cuales no se tienen la totalidad de los datos. Por otra parte, la medida global que se obtenga debe ser tal que aproveche al máximo toda la información disponible, sea robusta y permita identificar la influencia de cada indicador, y dimensión, en el grado de competitividad obtenido. Estos aspectos solo pueden ser conseguidos mediante el establecimiento del marco teórico adecuado, la elección del conjunto de indicadores fiables y el desarrollo de un método de agregación cuya función se

verifique que cumpla con las propiedades propuestas en la bibliografía, consideradas como deseadas para un buen indicador sintético.

Una vez que ha sido expuesta la situación actual del estudio de la competitividad turística, y su afección al ámbito del Caribe, se considera que su estudio es de gran importancia, tanto desde el punto de vista de la contribución al conocimiento, como desde la vertiente social, económica y medioambiental. De este modo, la presente investigación tiene como objetivo general realizar un análisis de la competitividad turística sostenible de los países de la región del Caribe, que permita analizar las fortalezas y debilidades de los mismos ofreciendo herramientas fiables de soporte al proceso de la toma de decisiones por parte de los gestores. Todo ello se pretende a través del empleo de indicadores sintéticos, por su demostrada utilidad para este fin.

Para conseguir el objetivo general se han trazado varios objetivos específicos:

1.- Contribuir con el análisis del concepto de competitividad turística y los diferentes modelos e indicadores propuestos, así como los problemas relacionados con su medición.

2.- Proporcionar una base de datos para medir la competitividad del turismo en el área del Caribe, verificada como fiable para valorar ese concepto multidimensional y justificado teóricamente, desde el establecimiento del marco teórico y los estudios previamente realizados.

3.- Desarrollar procedimientos de agregación que agrupen toda la información contenida en un número de indicadores y sean representativos del concepto que se pretende medir, tomando las decisiones metodológicas necesarias para crear indicadores sintéticos sobre las ventajas y dificultades de los ya existentes en la literatura, siempre con la visión de poder ser útil como valoración tanto estática como dinámica del concepto a medir, permitiendo la toma de decisiones consistentes y evaluables.

4.- Presentar un ranking de competitividad turística para los países del área del Caribe que identifique la posición relativa de cada uno de los países incluidos, con respecto al resto de sus competidores, dada la similitud de la oferta turística del territorio. Además, que permita medir la competitividad a través del tiempo mediante el empleo de información de varios años (2007-2015) de modo que este concepto se pueda analizar con un enfoque dinámico, considerando que, en ocasiones, las decisiones administrativas en los destinos turísticos, así como la creación de nuevas infraestructuras, no suelen tener un efecto inmediato, sino al mediano y largo plazos.

Para dar cumplimiento a los objetivos planteados, el trabajo se compone de tres capítulos. Capítulo 1: “Competitividad de los destinos turísticos. Conceptos, modelos y medición”, tiene como finalidad analizar el marco teórico en torno a la definición de la competitividad de los

destinos turísticos y las dificultades para lograr un significado comúnmente aceptado, a pesar de su creciente importancia entre los académicos y profesionales. Posteriormente, se estudian los diferentes modelos desarrollados para explicar este fenómeno. Seguidamente se presenta el Índice de Competitividad de Viajes y Turismo que, a pesar de sus grandes críticas, es uno de los más utilizados y referenciados a nivel global. Finalmente, se muestra una descripción general de la "Región del Caribe" como estudio de caso para la presente investigación.

Los siguientes capítulos comprenden estudios que involucran propuestas de índices, estáticos y dinámicos, para medir la competitividad turística, destacando su fiabilidad y las potencialidades para proporcionar información a los tomadores de decisiones. El Capítulo 2 lleva por título "Propuestas metodológicas para medir la competitividad de los destinos turísticos. Un enfoque estático". En este se persigue demostrar la viabilidad de tres metodologías para medir la competitividad de los destinos turísticos de la región y comparar los resultados con los del Índice de Competitividad de Viajes y Turismo. A partir de estos, proponer un ranking regional de competitividad de destinos turísticos con la inclusión de otros destinos de la región que hasta el momento no han sido incluidos en el TTCI. Para ello se desarrollaron dos estudios.

El primero incluye los 17 destinos de la región considerados en el índice global de competitividad del Foro Económico Mundial (WEF). Se estudia la viabilidad de las metodologías propuestas con los datos provenientes de la edición de 2015 del Índice de Competitividad de Viajes y Turismo. Una vez analizada su relación con el índice global, el segundo estudio propone realizar el proceso de medición de la competitividad incluyendo indicadores iguales o cercanos a aquellos definidos por el WEF para explicar la competitividad de los destinos turísticos. Este incluye 33 destinos de la región (16 más que la mayor cantidad de destinos incluidos en una edición del TTCI) para los cuales se pudo obtener información en las diferentes fuentes existentes y 27 indicadores representativos de los aspectos recogidos por el WEF.

El Capítulo 3: "Un enfoque dinámico para analizar la competitividad de los destinos turísticos", propone realizar un estudio del comportamiento de la competitividad de los destinos en un período de tiempo. Este, igualmente, contiene dos estudios de caso, los cuales consideran los 33 destinos seleccionados de la región, cada uno encaminado a mostrar una propuesta diferente de análisis.

Se presenta el Indicador Sintético Dinámico de Programación por Metas, propuesto por Pérez, F. et al. (2018), obtenido a partir del Indicador Sintético de Programación por Metas (Blancas

et al., 2010a; Pérez, V. et al., 2017). Este tiene como objetivo determinar las variaciones en el nivel de competitividad de los destinos a lo largo del tiempo. Para facilitar el nivel de análisis, el índice se descompone en dos factores que permiten identificar si los cambios en el nivel de competitividad de un destino, a lo largo del tiempo, se deben a factores internos o externos; esto es, cambios relativos a variaciones en los valores de sus sindicadores, o cambios debidos al establecimiento de nuevos niveles de aspiración. El análisis consideró los valores de 35 indicadores de cada destino para los años 2007 y 2015. Entre ellos se cuenta con indicadores representativos de los factores que determinan el nivel de competitividad de un destino y aquellos que son resultado de la actividad turística, llamados "indicadores clave" (WEF, 2017), los cuales no son contemplados en el índice que propone esta organización.

El segundo estudio tiene como objetivo analizar el rendimiento de los destinos turísticos hacia una mejor posición competitiva durante un período de tiempo. La propuesta implica observar el desempeño de un destino con respecto a sí mismo y a sus competidores. Para este objetivo, se propone utilizar la pendiente de la ecuación de regresión para cada indicador en cada destino. Esto permite identificar el rendimiento promedio de un destino en un período de tiempo, de modo que sea posible observar si mejora con respecto a sí mismo y, a la vez, si lo hace en mayor grado que el resto de sus competidores.

Además, se propone el análisis clúster para agrupar los destinos según su nivel de desempeño alcanzado. Para este estudio se emplearon los indicadores referentes al comportamiento de la actividad turística de cada país, provenientes del Consejo Mundial de Viajes y Turismo (*World Travel and Tourism Council*, WTTC) para el período 2004-2016. Finalmente, se presentan las conclusiones generales extraídas de la investigación.

CHAPTER 1. TOURISM DESTINATION COMPETITIVENESS. CONCEPTS, MODELS, AND MEASUREMENT

This chapter includes the theoretical framework around the definition of tourism destination competitiveness and the difficulties in the attainment of a commonly accepted meaning, despite its increasing importance among scholars and practitioners. Subsequently, the various models developed to explain this phenomenon are analysed. Additionally, The Travel and Tourism Competitiveness Index is also presented. Despite receiving major criticism, it is one of the most often used and referenced rankings of tourism destination competitiveness. Finally, an overview of the "Caribbean Region" is presented as the case study for the present research and partial conclusions are drawn.

1.1 Tourism Destination Competitiveness

Tourism destination competitiveness (TDC) has emerged as an important concept for policy-makers and scholars within the last 20 years, and there is an extensive debate regarding the definitions, parameters, and measurement of the concept (Abreu-Novais et al., 2016). The current literature reveals the existence of diverse definitions of TDC. Definitions are important since they set the stage for the falsifiability of theories, thereby prompting hypotheses and attributing meanings and assumptions that affect future research (Croes & Semrad, 2018).

Defining TDC is as elusive as the search for a universal definition of international competitiveness, and there seems to be no generally accepted definition (Mazanec et al., 2007; Koo et al., 2016; Mendola & Volo, 2017; Hanafiah & Zulkifly, 2019). The increasing importance gained by the topic as a key subject in destination marketing and management research has tiggered the existence of several definitions (Komppula, 2014). Numerous Tourism Destination Competitiveness (TDC) definitions have been registered in the literature as shown below.

Poon (1993) believes that on order to be competitive, every destination has to follow 4 key principles: (1) put the environment first; (2) make tourism a leading sector; (3) strengthen the distribution channels in the marketplace; and (4) build a dynamic private sector. These approaches seem practical but have been criticised as being too broad and general to be meaningful to tourism stakeholders and policy-makers (Poon, 1993).

Alternatively, TDC it has been defined as the capacity of a destination to reach its objectives in the long run in a more efficient way than the international or regional average. This means that a competitive destination is able to realize a higher profitability than the average, with the

lowest social costs and without damaging the environment and available resources (De Keyser & Vanhove, 1994).

Other authors assume that the competitiveness of the destinations lies in their ability to provide a high standard of living for residents (Crouch & Ritchie, 1999). Moreover, these authors argued that, in order to succeed, destinations must ensure that their overall attractiveness, and the integrity of the experiences they deliver to visitors, must equal or surpass that of the many alternative destination experiences open to potential visitors (Crouch & Ritchie, 1999). The way to achieve this is to increase tourism expenditure, to increasingly attract visitors, while providing them with satisfying, memorable experiences, and to do so in a profitable way, while enhancing the well-being of destination residents and preserving the natural capital of the destination for future generations (Crouch & Ritchie, 2003, 2005).

According to Crouch and Ritchie (1999), destination competitiveness is associated with the economic prosperity of residents of a country. This is consistent with the previous definitions and with the view espoused by the World Economic Forum (WEF) (Porter et al., 2001). Development designed to attract international visitors may have a wide range of purposes. Ultimately, however, it seems reasonable to focus attention on economic prosperity. That is, nations (or destinations) compete in the international tourism market primarily to foster the economic prosperity of residents (Dwyer & Kim, 2003).

Other definitions view TDC as the ability of a destination to maintain its market position and share and/or to improve upon these factors over time (d'Hauteserre, 2000). This term is also considered as the destination's ability to create and integrate value-added products that sustain its resources while maintaining its market position relative to competitors (Hassan, 2000). Dwyer et al. (2000) concluded that TDC is a general concept that encompasses price differentials coupled with movements in the exchange rate, productivity levels of various components of the tourist industry and qualitative factors that affect the attractiveness or otherwise of a destination.

Moreover, according to Dwyer and Kim (2003), TDC would appear to be linked to the ability of a destination to deliver goods and services that perform better than other destinations on those aspects of the tourism experience considered as important by tourists. For these and other authors, destination competitiveness is both a relative and multi-dimensional concept. Relativity refers to relevant competing locations, which means that it is necessary to establish which destinations comprise the competitive set (Uysal et al., 2000; Enright & Newton, 2004;

Crouch & Ritchie, 2005). The quality of the competitor determines the chances of being successful in the competition, which indicates that not only competition have to be specified, but also competitiveness (Tsai et al., 2009). Multidimensionality refers to the salient attributes or qualities of competitiveness (Komppula, 2014).

Valls (2004) states that a competitive tourism destination should, in the long term, generate benefits higher than the competence average in three different areas: Economic benefits (for regional business, in such a way that the best investors, workers, suppliers, experts, etc. are attracted); social benefits (in terms of the quality of life, quality job positions, innovation, etc.); and environmental benefits (in a way in which tourists fully finance the regeneration rate, thereby obviating the need for externalities).

Tourism destination competitiveness can also be defined as the ability of a destination to create, integrate and deliver tourism experiences, including value-added goods and services considered a priority by tourists, which sustain resources while maintaining market position relative to other destinations (Enright & Newton, 2005). They also concluded that a destination is competitive if it can attract and satisfy potential tourists, and this competitiveness is determined both by tourism-specific factors and by a much wider range of factors that influence the tourism service suppliers.

Additional approaches consider that a competitive destination is one that features profitable tourism businesses, an effective market position, an attractive environment, satisfactory visitor experiences, and supportive local residents (Pike, 2008). Furthermore, TDC is considered as the destination's ability to create, integrate, and deliver tourism experiences, including value-added goods and services considered to be important by tourists. These experiences sustain the resources of a destination and help it maintain a good market position relative to other destinations (Hong, 2009).

More recently, tourism competitiveness for a destination now includes the ability of the location not only to optimize its attractiveness for residents and non-residents, but also deliver quality, innovative, and attractive (e.g., providing good value for money) tourism services to consumers, and to gain market shares in the domestic and global market places, while ensuring that the available resources supporting tourism are used efficiently and in a sustainable way (Dupeyras & MacCallum, 2013). It can be observed that TDC is a topic that is complex and largely misunderstood (Abreu-Novais et al., 2016) and it still lacks a commonly accepted and

standardized definition (Hong, 2008). There is an absence of consensus regarding just what destination competitiveness means (Knežević et al., 2016).

The term "touristic destination" incorporates in itself the terms tourism and destination as two essential components, and hence the success of the tourism destination development depends on both the supply side and the demand side. Tourism destination competitiveness from the demand side (i.e., from the perspective of actual and potential tourists) is closely related to the quality of the whole tourism experience at that tourism destination. From the supply side (which presents a connection of various elements, such as: attractions, cultural heritage, services, leisure activities, and infrastructures), destination competitiveness is more concerned with the economic benefits of the destination (revenues, employment, sustainable growth of the destination and the firms within this destination) (Dimoska & Trimcev, 2012). These economic benefits, when well managed, may achieve the desired high quality-of-life standards for the residents.

Those existent definitions refer to the ability of the destination to attract and satisfy tourists (Enright & Newton, 2004; Tsai et al., 2009) and residents (Dupeyras & MacCallum, 2013) and to deliver goods and services that perform better than those offered at other destinations (Komppula, 2014). TDC is also associated to its in the long term maintenance (De Keyser & Vanhove, 1994), and to economic prosperity and a high standard of living for residents (Crouch & Ritchie, 1999) while preserving the cultural capital for future generations (Crouch & Ritchie, 2003). Moreover, it has been is argued that it is necessity to compare a destination to other competitors (Dwyer & Kim, 2003; Enright & Newton, 2005) and to attract the best investors, managers, staff, etc. (Valls, 2004).

Recent studies redefines tourism competitiveness as the reconfiguration of resources, assets, and services towards a product that increases satisfaction and memorable tourist experiences (Croes et al., 2020). This reconfiguration could build resident-tourist interactions that then foster resident knowledge and skill towards creating the positive tourist experience, thereby emphasizing the relational aspects of tourism (Russo & Richards, 2016). The proposed definition includes four relevant characteristics, which involve tourism competitiveness. These characteristics allude to: long-term performance moored in productivity (Croes, 2011; Clerides, 2012); resource and asset control, which references product quality and derived memorable experiences (Crouch & Ritchie, 2003); relativity, which is the ability to attract tourists over competing destinations (Abreu-Novais et al., 2016; Zehrer et al., 2017); and dynamic processes,

which imply that the product constantly evolves by building capabilities (Kubickova et al., 2017). Moreover, this concept is directly linked to sustainability.

It is evident that the success of a tourism destination is directly linked to the quality of its natural and cultural resources (Poon, 1993; Ritchie & Crouch, 2003; Dupeyras & MacCallum, 2013). The importance of the natural environment for the provision of an attractive location for tourism cannot be overstated, and it is clear that policies and factors enhancing environmental sustainability are crucial for ensuring that a country will continue to be an attractive destination going into the future (WEF, 2009). Competitiveness is, therefore, illusory without sustainability (Ritchie & Crouch, 2000).

The existence of a great variety of definitions supports the initial affirmation of the elusiveness of a unique and accepted TDC perception (Hanafiah & Zulkifly, 2019). It is a multi-dimensional and complex concept and contains the evolutionary meanings, scopes, measurements, and relevance from economics to management science (Mazanec et al., 2007; Hong, 2009; Koo et al., 2016; Mendola & Volo, 2017; Hanafiah & Zulkifly, 2019).

The definition of destination competitiveness is problematic in a number of ways. First, when referencing destinations and firms, there is no consensus with regard to the unit of analysis for competitiveness. Second, the debate is wanting in terms of the dependent variable, which renders rigorous analysis challenging. Third, there is no clear conceptualization as to the sources of competitiveness. In other words, what drives destination competitiveness? Is it cost, productivity, business climate, infrastructure, or innovation? These indicators are based on potential, and are therefore, ex-ante in nature (Melián-González & García-Falcón, 2003). And fourth, the properties and natures of the destination competitiveness structure are not well defined. In other words, is tourism competitiveness a formative or reflective construct? (Croes & Semrad, 2018). One major consideration is that competitiveness is a dynamic phenomenon. The factors affecting competitiveness are constantly changing. Therefore, an optimal competitive position must constantly be pursued and can never be achieved in a permanent way (De Keyser & Vanhove, 1994).

Despite the existence of the aforementioned definitions of TDC and other existent, recent studies does not plan to propose new characterizations of the term. As a consequence, there seems to be a general consensus that those existing definitions contain all the aspects considered relevant in TDC. This difficulty in defining competitiveness seems to stem from competing perspectives on the usefulness of the term itself (Wint, 2003; Croes & Kubickova, 2013; Croes

& Semrad, 2018). Despite the existence of diverse definitions, by considering the main objective of this research, TDC can be defined as the ability of the place to optimize its attractiveness for residents and non-residents, to deliver quality, innovative, and attractive (e.g., providing good value for money) tourism services to consumers, and to gain market shares on the domestic and global markets, while ensuring that the available resources supporting tourism are used efficiently and in a sustainable way (Dupeyras & MacCallum, 2013).

The variety of definitions has provoked the existence of diverse dimensions in the concept, due to the potentially vast number of elements involved. As a result, several authors have striven to create different models of competitiveness (Dimoska & Trimcev, 2012). However, in spite of the many attempts to create a definition, there is not a conciliation regarding a general model. The most relevant models are addressed in the section below. These have served as a base for the research in this field.

1.2 Models of Tourism Destination Competitiveness

Given the difficulty in TDC definition, as well as its usefulness and importance, various attempts to create TDC models have been registered (Parra-López & Oreja-Rodríguez, 2014). Again, due to the complexity of the concept, there is no an universal model that covers all the issues and aspects related to TDC (Meng, 2006). A number of theoretical models that tackle the analysis of the competitiveness of tourist destinations can already be found in the realm of academic literature, most significantly from the 1990s onwards (Blanco-Cerradelo et al., 2018). Among these models, the author would like to draw attention to those that focus on the theorization and the development of models of destination competitiveness, among which can be found those from Crouch and Ritchie (1999); Ritchie and Crouch (2000); Dwyer and Kim (2003); Heath (2003); Ritchie and Crouch (2003); Gooroochurn and Sugiyarto (2005); Hong (2009); Navickas and Malakauskaite (2009); Knežević et al. (2016). Also of note are those concerned with the assessment of the competitive positioning of a destination (e.g., De Keyser & Vanhove, 1994; Pearce, 1997; Kozak & Rimmington, 1999; Dwyer & Kim, 2003; Enright & Newton, 2004; Enright & Newton, 2005; Gomezelj & Mihalic, 2008; Armenski et al., 2018). The most recognized and commonly used models are described below.

1.2.1 Crouch and Ritchie's Calgary Model or the Conceptual Model of Destination Competitiveness (1999)

Crouch and Ritchie (1999) propose a theoretical model that is neither predictive nor causal, but is simply a conceptual model, whose fundamental purpose is to use highly abstract concepts

and relationships to explain the factors that determine tourism competitiveness (Parra-López & Oreja-Rodríguez, 2014; Mendola & Volo, 2017). Diverse researchers concluded that this is the most detailed and referred work concerning TDC (Enright & Newton, 2004; Hudson et al., 2004; Meng, 2006; Parra-López & Oreja-Rodríguez, 2014). This model combines comparative and competitive advantages that were initially conceived as two distinct and interrelated concepts in Porter (1990) diamond (Meng, 2006; Hanafiah & Zulkifly, 2019). According to Crouch and Ritchie, comparative advantages comprised the available tourism resources while the competitive advantages were related to the destination's ability to use tourism resources effectively. Thus, the model combines the necessary comparative and competitive elements that account for the competitiveness of destinations and synergies the elements that determine the attractiveness of the region (Annex 1).

This model incorporates the main macro and micro elements of competitiveness (Meng, 2006). It also acknowledges the impact of global macro-environmental forces (e.g., the global economy, terrorism, and cultural and demographic trends, etc.) and competitive micro-environmental circumstances that influence the functioning of the tourism system associated with the destination. The factors of destination competitiveness are represented in the model and clustered into five main groups. In total, it identifies 36 destination competitiveness attributes (Crouch, 2007b; Croes, 2011). Specifically, Crouch and Ritchie (1999) identify six dimensions of TDC (economic, political, social, cultural, technological and environmental). Furthermore, they describe the five main components that determine the competitiveness of a tourist destination: (1) Core Resources and Attractors; (2) Supporting Factors and Resources; (3) Destination Policy; Planning and Development; (4) Destination Management; and (5) Qualifying and Amplifying Determinants.

1. Core Resources and Attractors: the strength of the drawing power of the destination. This component describes the primary elements of destination appeal. While other components are essential for success and profitability, a destination's core resources and attractors are often the fundamental reasons why prospective visitors choose one destination over another.
2. Supporting Factors and Resources: the springboard for tourism development. These support or provide a foundation upon which a successful tourism industry can be established. A destination with an abundance of core resources and attractors but a lack of adequate supporting factors and resources, may find it very difficult to develop its tourism industry. These factors may significantly shape the realization of tourism potential at the destination. Careful planning

and management may be required to ensure a proper balance between tourism growth and the development of infrastructure and other facilitating resources.

3. Destination Policy, Planning, and Development: the strategic framework of the destination. A strategic or policy-driven framework for the planning and development of the destination with particular economic, social, and other societal goals as the intended outcome can provide a guiding hand to the direction, form, and structure of tourism development. Such a framework can help to ensure that the tourism development that does occur promotes a competitive and sustainable destination, whilst meeting the quality-of-life aspirations of those who reside at the destination. Thus, better tourism development policies and planning should result in greater destination competitiveness.

4. Destination Management: the destination's ability to implement a tourism strategy. This group of factors focuses on those activities that: implement the policy and planning framework established under destination policy, planning and development; enhance the appeal of the core resources and attractors; strengthen the quality and effectiveness of the supporting factors and resources; and adapt best to the constraints or opportunities imposed or presented by the qualifying and amplifying determinants. These activities represent the most direct mechanism for managing the destination's competitiveness and sustainability.

5. Qualifying and Amplifying Determinants: factors which leverage or limit competitiveness. This group of factors might alternatively have been labelled situational conditioners because they affect the competitiveness of a tourist destination by defining its scale, limit, or potential. These qualifiers and amplifiers moderate or magnify destination competitiveness by filtering or leveraging the influence of the other four groups of factors. Their effect may be so significant as to represent a 'ceiling' to tourism demand and potential. However, despite the potential importance of these factors, it may be difficult for the tourism industry alone to control or influence their impact on the destination's competitiveness.

This model has undergone numerous refinements by other tourism researchers and is continually being tested, strengthened, and disputed. For example, certain authors criticised the model's framework for not acknowledging the role of the economy and globalization on destination competitiveness (Hanafiah & Zulkifly, 2019). In addition, Heath (2003) also criticised the model for ignoring the impact of environment factors on destination competitiveness. Others complained that the model focuses on a specific tourism model that appears to come primarily from research undertaken in developed countries rather than including undeveloped countries, mainly due to the difficulty in achieving all the variables

comprised thereon (Diéguez et al., 2011). Furthermore, Dwyer and Kim (2003) argued that this model is insufficient in accounting for TDC, as only tourism supply factors are used while the demand factors are neglected (Hanafiah & Zulkifly, 2019). Moreover, Parra-López and Oreja-Rodríguez (2014) pointed out the highly abstract relationships established in the model.

Despite the criticisms, this multi-faceted model is crucial to help comprehend the complex, fragmented, and interrelated nature of the tourism industry and the internal relationships between the factors (Meng, 2006). The model applies the competitiveness of the service industry to the context of tourism destinations on the basis of countries, industries, products, and companies (Dwyer & Kim, 2003; Kozak et al., 2010). Not only is it considered to be the most important work on the analysis of tourism competitiveness (Hong, 2008), but also to be the most comprehensive (Hong, 2008; Kozak et al., 2010; Parra-López & Oreja-Rodríguez, 2014), rigorous and referred (Enright & Newton, 2004; Valls, 2004; Botti & Peypoch, 2013; Croes & Kubickova, 2013; Komppula, 2014). This model has prompted research and applications as well as further development and discussion (Dwyer & Kim, 2003; Kim, N. & Wicks, 2010).

An additional issue regarding the model is the necessity to establish an order and to weight its elements with the aim of identifying an importance hierarchy of each factor (Garau, 2006; Diéguez et al., 2011). To this end, a study was carried out by Crouch (2007) to develop an insight into the importance and impact of the attributes which shape the competitiveness of tourism destinations presented in the model. The study was undertaken as a survey and analysis of expert judgement, using Analytic Hierarchy Process (AHP). Destination managers and tourism researchers provided their judgements regarding the most important or influential competitiveness attribute. The results of the study suggest that 'experts' judge the attributes that comprise a destination's core touristic resources and attractiveness to be the cornerstone of a destination's competitiveness. Further conclusions are available in Crouch (2007b; 2011).

1.2.2 Model of Kim (2001)

Kim (2001) proposed a new model of tourism competitiveness that considered four sources of competitiveness:

1. Primary sources of competitiveness comprise subjects (politicians, employees, and travel agents), environment, and resources (historical, cultural, and natural).
2. Secondary sources encompass tourism policy, destination planning, and management, investment in the sector, and tourist taxes and prices.

3. Tertiary sources of competitiveness include tourism infrastructure, visitors' accommodation, attraction of the resources, advertising, and the qualifications of personnel.
4. Finally, quaternary sources (which Kim, C. considers the result of the previous three sources) refer to tourist demand, employment created by the sector, the "behaviour of tourism" (growth rate, balance of payments of the sector, the sector's contribution to the GDP of the country or region), and tourism exports.

These sources of competitiveness constitute the tourism outputs obtained from different inputs (sector productivity), and therefore they constitute a direct indicator for the assessment and comparison of competitiveness. This model considers that each source of competitiveness should have different weighting, with quaternary sources always receiving the greatest weighting (Kim, C., 2001). One significant criticism of this model is that it does not justify why a source of competitiveness should be considered a primary, secondary, or tertiary source. It has even been argued that rather than the quaternary sources of competitiveness being sources in themselves, they could be considered as the effects or consequences of competitiveness itself (Garau, 2006; Parra-López & Oreja-Rodríguez, 2014).

1.2.3 Integrated Model of Destination Competitiveness. Dwyer and Kim (2003)

The model proposed by Dwyer and Kim (2003) is based on Crouch and Ritchie's model (1999). According to Dwyer and Kim (2003), the model brings together the main elements of national and firm competitiveness as proposed in the wider literature. It also contains the main elements of destination competitiveness as proposed by various tourism researchers and many of the variables and category headings identified by Crouch and Ritchie (1999), but differs in certain significant respects. This model explicitly recognizes demand conditions as an important determinant of destination competitiveness. It also explicitly recognises that destination competitiveness is not the ultimate objective of policy-making, but is instead an intermediate goal towards the objective of regional or national economic prosperity (Dwyer & Kim, 2003).

According to Dwyer and Kim (2003), the determinants of destination competitiveness can be classified under eight main headings (Dwyer et al., 2004). Each of the attributes' categories includes sub-attributes, which in total summarize 85 elements, structured as a decision-making tree (Berdo, 2015) (Annex II). Core Resources and Supporting Factors and Resources are those attributes of a destination that attract visitors and from the basic foundations of a sustainable tourism industry (Crouch & Ritchie, 1999). Together, they underpin destination

competitiveness. Core Resources are divided into two types: Endowed (Inherited) and Created. Inherited Resources, in turn, can be classified as Natural (mountains, lakes, beaches, rivers, climate, etc.) or Cultural/Heritage (cuisine, handicrafts, language, customs, belief systems, etc.). Created Resources would include attributes such as Tourism Infrastructure, Special Events, the Range of Available Activities, Entertainment, and Shopping. Supporting or Enabling Factors and Resources include: General Infrastructure, Quality of Service, Accessibility of Destination, and Hospitality and Market Ties (Dwyer & Kim, 2003).

Destination Management factors are those that can enhance the appeal of the core resources and attractors, strengthen the quality and effectiveness of the supporting factors and resources, and best adapt to the constraints imposed by the situational conditions (Crouch & Ritchie, 1999). The category includes the activities of Destination Management Organizations, Destination Marketing Management, Destination Policy, Planning and Development, Human Resource Development, and Environmental Management (Dwyer & Kim, 2003; Ritchie & Crouch, 2003).

In this model, a distinction is made between Destination Management activities undertaken by the public sector (e.g., development of national tourism strategies, marketing by the National Tourism Organization, national and regional manpower programs, and environmental protection legislation) and Destination Management undertaken by the private sector (e.g., tourism/hospitality industry associations, industry involvement in and funding of destination marketing programs, industry training programs, and industry adoption of "green" tourism operations).

Demand Conditions comprise three main elements of tourism demand: Awareness, Perception, and Preferences. Awareness can be generated by various means including destination marketing activities. The image projected can influence perceptions and hence affect visitation. Actual visitation will depend on the match between tourist preferences and perceived destination product offerings. Situational Conditions are forces in the wider external environment that impact upon destination competitiveness. Situational conditions relate to economic, social, cultural, demographic, environmental, political, legal, governmental, regulatory, technological, and competitive trends and events that exert and impact on the way firms and other organizations at the destination do business, and present both opportunities and threats to their operation (David, 2001). These conditions correspond to the Qualifying and Amplifying determinants as identified by Crouch and Ritchie (1999).

Dwyer and Kim (2003) clearly differentiate between “inherited resources” and “created resources”, and consider that these two types of resources, together with “complementary factors and resources” have their own identities. These three elements determine whether a destination is attractive, and the success of the destination’s tourist industry should be based thereon. Therefore, Dwyer and Kim conclude that these elements constitute the basis of tourism competitiveness (Parra-López & Oreja-Rodríguez, 2014).

Their model additionally, recognises demand conditions as essential determinants of TDC, which is in line with the conception that a competitive destination must increase its tourism demand by continually developing tourism products (Heath, 2003). Furthermore, this model does not include separate dimensions for destination policies and development but rather subsumes both factors together under the destination management component. They also treat tourism infrastructure and general infrastructure as separate functions (Hanafiah & Zulkifly, 2019). The model does, however, offer the necessary structure to evaluate the destination competitiveness by fulfilling the criteria of sustainability and long-term effects towards the standard of living and life quality of the residents. It also offers the most complete structure to be used in comparing destinations and evaluating the relative importance of different attributes since it includes all the factors of the demand and supply side of tourism products of a destination.

However, this model does present certain limitations, as follows: since there can be more than 85 sub-attributes to a destination, their aggregation within 6 categories of attributes becomes difficult; many of the attributes are measured in a qualitative manner, multi-dimensional, abstract, and inaccurate way; finding data for each attribute is therefore difficult, since some items of data either do not exist or are unreliable, and the measurement of the dependent variable as destination competitiveness is also problematic (Berdo, 2015). Moreover in the model, once again, there is a lack of justification of which factors belong to which source (Parra-López & Oreja-Rodríguez, 2014). This has also been widely referred to in the literature (Gomezelj & Mihalic, 2008; Vodeb, 2010; Armenski et al., 2011), which reflects its utility. Compared to the model by Crouch and Ritchie, that of Dwyer and Kim both takes into consideration factors of the tourist-supply side, and also includes factors of the tourist-demand side (Berdo, 2015). Notwithstanding, these two models currently represent the principal work on tourism competitiveness, not only in the construction of conceptual models and in the understanding of competitive factors, but also in the search for measurement systems that can compare tourism destinations (Parra-López & Oreja-Rodríguez, 2014).

1.2.4 Gooroochurn and Sugiyarto's Tourism Competitiveness Monitor (2005)

Gooroochurn and Sugiyarto (2005) proposed a model which involves the conceptual aggrupation of the indicators in accordance with each sub-index, the determination of weights, the achievement of a competitiveness level, and the establishment of a ranking. It provides eight main indicators of tourism competitiveness. These are price competitiveness, infrastructure development, environmental quality, technology advancement, human resources, level of openness, social development, and human tourism. Each indicator consists of a set of variables chosen to represent the main concern of the indicator (Gooroochurn & Sugiyarto, 2005). In short, 23 variables are contained in the indicators in order to encompass the broad definition of tourism competitiveness.

Price competitiveness is usually regarded as one of the most important factors for a given destination. Competitiveness is also related to infrastructure development, as a guarantee of the destinations' basic facilities. The environment indicator captures the quality of the physical environment and the extent to which a country is aware of and involved in environmental management. The technology indicator signifies the advances of a country in its acquisition of modern technological systems. The human resources indicator measures the quality of the labour force in the destination country in terms of educational and related criteria, since better-quality labour can provide better-quality tourism services. The openness indicator, according to the literature on economic development, suggests that a country's openness to trade is a significant determinant of growth. The quality of life at the destination contributes to the tourism experience, thereby adding to the tourism quality of the destination. Finally, the human tourism indicator measures the achievement of human development in terms of tourism activity (Gooroochurn & Sugiyarto, 2005).

Aggregated indices are first constructed for each of the eight main indicators. The weights of the main indicators are then determined with Confirmatory Factor Analysis (CFA) for a sample of 93 countries (Mazanec et al., 2007). Furthermore, the index is determined using CFA and clustered into homogeneous segments according to the level of tourism performance of each destination (Crouch, 2007b; Mazanec & Ring, 2011; Perna et al., 2018; Hanafiah & Zulkifly, 2019). The model gives different weights to each factor and compares the competitiveness of different destinations and a ranking is generated according to their degree of competitiveness (Parra-López & Oreja-Rodríguez, 2014). By estimating these weights, the authors pave the way for the construction of a composite index for overall competitiveness (Mazanec et al., 2007). In Gooroochurn & Sugiyarto's subsequent analysis, they do not employ

a composite index of competitiveness. Rather, they employ the whole set of the eight main indicators for the construction of country clusters of similar competitive strengths. There is a fundamental problem inherent in such an attempt to capture competitiveness, since causes and effects of competitiveness are mixed together, thereby achieving a purely descriptive classification.

The final results are not consistent with the reality of destinations. The weight to be given to indicators may be questionable (Parra-López & Oreja-Rodríguez, 2014). However, in this research it is considered that better support of the weighting technique would have removed any such doubts. On the other hand, the indicators used makes reference to social, human, economic, and environmental aspects. However, the business structure of tourism destinations is not taken into account and, therefore, business is not considered as an essential part of TDC (Flores & Barroso, 2009). This study verifies a causal relationship between the constructs at an aggregated level, by further refining and ultimately improving the Competitiveness Monitor model (Assaker et al., 2014; Koo et al., 2016; Khan et al., 2017; Mendola & Volo, 2017). Their main contribution is that the model attempts to resolve the problem caused by lack of data, while still comparing the competitiveness of various countries (Parra-López & Oreja-Rodríguez, 2014). Moreover, not only are the indicators and the conceptual dimensions identified, but also their level of importance are determined and a composite competitiveness measure is proposed for the creation of an index.

1.2.5 The Formative Destination Competitiveness Model. Croes and Semrad (2018)

The newest model (Croes & Semrad, 2018) (Annex III) considers that there are specified variables that develop the competitive construct. This formative model rests on three main foundational pillars: the destination as unit of analysis, the focus on results, and the ability to deliver on quality of life. First, the model anchors destination as the unit of analysis. It assumes that destinations do not go out of business, because they can always adjust their prices and well-being levels. In this respect, the model eschews the rivalry concept inherent in the firm's perspective. Moreover, destinations benefit in their well-being and quality of life if other destinations become more prosperous themselves.

In addition, competitiveness entails two other components: satisfaction and productivity. Satisfaction is based on demand theories and is considered the driver for demand and reveals choices and tourist preferences. Productivity references the creation of value in the use of resources, which implies that the economic, social, and environmental benefits should exceed

their corresponding costs at all times. However, assessing productivity in the tourism context is a daunting task. Tourism encapsulates intangibility, simultaneous production and consumption, perishability, and heterogeneity. Therefore, for productivity to be relevant for destination competitiveness, productivity should be joined with its ultimate goal, which is an improved quality of life.

Second, examining inputs such as costs, productivity, capabilities, and attributes alone should not be considered as sufficient to assess destination competitiveness. Rather, the informational basis upon which to assess competitiveness should include the assessment of outcomes. Destination competitiveness researchers have usually defined outcomes in terms of market shares, arrivals, and income. The latter has been considered in relation to GDP and is associated with quality of life and well-being. The premise in this context has been that higher incomes triggered by tourism are a reflection of prosperity, wealth, and employment. Income is important for consumption according to consumption theory. However, there is evidence that income is not necessarily converted in well-being capital. There is evidence that destinations fail to deliver benefits to their local populations in accordance with their maximization of destination revenues. Therefore, this instrumental approach to quality of life has been criticised for not being particularly relevant regarding quality of life or well-being.

And third, improved quality of life should be present in order to characterize a destination as competitive. There has been increasing debate regarding whether GDP per capita can capture the true meaning of quality of life. Quality of life, or well-being, does include material (resources) as well as non-material conditions, such as health, education, environment, and security. However, how resources exert an impact on quality of life remains unclear due to conflicting life desires and needs. It depends on how additional resources spawned by tourism are being used. The significance of such revenues is not its monetization. Rather, if the monetary resources are channelled towards opportunities to support health care, education, infrastructure, life amenities, and a meaningful life, then quality of life will be enhanced. The multi-dimensional nature of quality of life implies that a person should have the freedom to live life in the manner to which he/she aspires and treasures.

This model requires a feasible set of variables/indicators representative of each pillar, which has not been proposed. Furthermore, their level of importance must also be provided. Finally, the figure implies that greater competitiveness involves high revenue per arrivals. This could be a feasible demonstration of the competitiveness of a given destination, but an analysis of different TDC rankings (WEF, 2008, 2009, 2015, 2017, 2019) demonstrates that it is not always

the most competitive destination that carries more revenue per arrival. This is consistent with the authors' demonstration that competitiveness is more closely related to the destinations than to the firm. The authors also signalled that, in their model, it remains unclear how inputs are converted into outputs.

The model is comprehensible, which is a guarantee of its potential future use for research purposes. The authors have anchored the foundational components of the construct on comparative advantage (productivity), utility (revealed preferences), the market (structure), and quality of life (capabilities) and argue that destination competitiveness should explain the relative performance of destinations. In other words, destination competitiveness explains destination performance heterogeneity (Croes & Semrad, 2018). There are other models of tourism competitiveness of less relevance, which in the main fail to offer clear and concise measurements of competitiveness (Poon, 1993; Hassan, 2000; Mihalic, 2000; Huybers & Bennett, 2003; Hu & Wall, 2005; Mazaro, 2007; Hong, 2009; Navickas & Malakauskaite, 2009).

In the analysis of TDC models, it is clear that while no widely accepted causal model of destination competitiveness exists, there is agreement that the construct comprises economic, social, cultural, and environmental dimensions. As a result, according to their use in the literature, can be stated that Ritchie and Crouch's model of destination competitiveness is now arguably the most comprehensive and most rigorous of all models of this type currently available (Meng, 2006). Furthermore, the measurement of the concept could be problematic, due to its lack of a widely accepted definition. It is when an attempt is made to measure competitiveness that the difficulties of defining it become manifest since competitiveness is both a relative concept (i.e., superior relative to what?) and is usually multi-dimensional (i.e., what are the salient qualities?) (Scott & Lodge, 1985; Crouch & Ritchie, 1999). It is a complex concept that has a strongly multi-dimensional nature (Crouch, 2011; Dwyer et al., 2014).

As a result, indicators (simple and composite) stand out as the most feasible tools for its measurement. Their use prevails among the proposed models of tourism competitiveness, due to their ability to measure multidimensional concepts (Pérez, V. et al., 2013). This is the so-called analytic approach (OECD, 2000), which proposes the use of indicators to measure a given phenomenon considering that, for most TDC studies, the competitiveness level of a destination is associated with the way in which it achieves high scores for the observed indicators. The usefulness of the indicators has been tested with the presence of simple and composite indicators in almost all the studies aimed at measuring TDC (e.g., Crouch & Ritchie,

2003; Dwyer et al., 2004; Enright & Newton, 2005; Gooroochurn & Sugiyarto, 2005; Crouch, 2007b; Cracolici & Nijkamp, 2008; Hong, 2009; Croes, 2011; Crouch, 2011; Zhang et al., 2011; Croes & Kubickova, 2013; Komppula, 2014; Parra-López & Oreja-Rodríguez, 2014; WEF, 2015; Dwyer et al., 2016; WEF, 2017; Drakulić Kovačević et al., 2018; WEF, 2019).

Composite indicators (also known as synthetic indices or performance indices) are popular tools for the assessment of the performance of countries/entities on human development, sustainability, perceived corruption, innovation, competitiveness, or other complex phenomena that are not directly measurable and not uniquely defined. They are defined as the mathematical combination of individual indicators that represent different dimensions of a concept whose description is the objective of the analysis (Saisana & Tarantola, 2002). Examples include the Human Development Index (Kovacevic et al., 2018), the Corruption Perceptions Index (Transparency International, 2018), the Financial Secrecy Index (Cobham et al., 2018), the Environmental Performance Index (Wendling et al., 2018) and the Travel and Tourism Competitiveness Index (WEF, 2019), among others. Composite indicators are employed for many purposes, including policy monitoring, communication to the public, and the generation of rankings (Becker et al., 2017).

The most frequently used simple and composite indicators in tourism are those referring to destination competitiveness (Mendola & Volo, 2017). The application of these indicators to international tourism areas has: identified relevant input attributes, provided destinations rankings, and opened the debate on the appropriateness of currently used definitions and measurements of destination competitiveness (Croes, 2005; Mazanec & Ring, 2011). Their construction involves a set of methodological steps explained (Nardo et al., 2005a; Nardo et al., 2005b; OECD, 2008), which are excellently described by Mendola and Volo (2017) associated to TDC.

1.3 Tourism destination competitiveness measurement

One of the key issues in tourism competitiveness is how it should be measured. It becomes a crucial task to ensure the short-term and long-term success of a destination. However, measuring competitiveness is far from a simple task. On one hand, the literature contains many different models and indicators for tourism competitiveness, and on the other hand, competitiveness is a relative concept that: *i*) compares a destination over time; *ii*) compares several tourism destinations to one another; or *iii*) compares a destination with its source markets (Dorta & Hernández-Martín, 2015). Abreu-Novais et al. (2016) have successfully

analysed the issues involved in the difficulty of measuring TDC trough indicators. The authors argue that measuring tourism competitiveness involves four aspects: the type of data gathered, the tools and methods employed, the level of destination used, and the number of destinations chosen for the comparison.

The data used can be based on either hard data (objective measures) or soft data (subjective values). As pointed out by these authors, classic hard data is typically included in assessments of destination competitiveness (e.g., Bolaky, 2011; Croes, 2011; Zhang et al., 2011; Croes & Kubickova, 2013; Li et al., 2013; Gómez-Vega & Picazo-Tadeo, 2019). It is characterized by its objectiveness and independent verifiability and has the great advantage of allowing researchers to conveniently gather large volumes of data. Hard data is mainly related to tourism demand measures, which are considered as not always being representative of TDC (Crouch, 2011), but is still used for this purpose, such as tourist arrivals, market share, tourism occupancy rates, and tourism expenditure, among others (e.g., Dwyer et al., 2000, 2002; Mazanec et al., 2007; Botti et al., 2009; Kayar & Kozak, 2010; Croes, 2011; Zhang et al., 2011; Li et al., 2013). In addition to these tourism demand measures, hard data can also be used to measure other destination competitiveness factors. For instance, the 'culture and history' element, recognized in most theoretical frameworks, can be assessed using objective measures including the age of the culture or the number of heritage sites listed with UNESCO (Abreu-Novais et al., 2016).

There are other studies that use soft data, or stakeholders' perceptions, in which TDC is based on the valuation of different topics. These studies have striven to quantify the competitiveness of international tourist destinations by using information from surveys administered directly to tourists (e.g., Bahar & Kosak, 2008; Chens et al., 2008; Cracolici & Nijkamp, 2008; Drakulić Kovačević et al., 2018; Evren & Kozak, 2018) and to other stakeholders (Bornhorst et al., 2010; Dwyer et al., 2012; Gómez-Vega & Picazo-Tadeo, 2019). Soft data includes the perceived beauty of the scenery, friendliness of residents, and quality of service, and enable an assessment of those qualitative attributes of destinations, which are also important in TDC measurement. Soft data is traditionally expressed in qualitative forms although quantitative approaches, such as Likert scales are also common (Abreu-Novais et al., 2016). One major advantage of this data is its ability to capture the intrinsic characteristics of destinations, which are important factors in competitiveness and are normally difficult to measure (Gooroochurn & Sugiyarto, 2005).

In spite of the advantages of subjective measures, their use for the comparison of destinations according to their competitiveness level may sometimes not be completely feasible. When the destinations under evaluation are largely regions or countries, it may occur that not all the

respondents have complete knowledge regarding competitiveness topics for a given destination or for all the destinations compared. Moreover, when the study involves destinations within the same region, the use of questionnaires as a tool to collect their data can severely compromise response rates (Dillman et al., 1993; Abreu-Novais et al., 2016). Such is the case of the WEF's Travel and Tourism Competitiveness Index, in which each respondent of the Executive Survey Opinion offers a score for an indicator that considers his/her own country and not with respect to its competitors.

In large studies, it is very difficult to achieve a response with information regarding all the destinations considered. This does not mean that the use of perceptions to analyse TDC is a mistake; on the contrary, their use helps to value the TDC determinants that are qualitative, multi-dimensional, abstract, and/or imprecise, such as culture, history, and perceived quality, among others. The usefulness of judgements in TDC measurement is justified by the fact that these kinds of measures have progressively dominated this stream of research (Komppula, 2014; Abreu-Novais et al., 2016; Ganguli & Husain, 2017). Taking this into account, the authors would simply like to point out an issue that needs to be considered when using subjective data. This is to ensure that all the respondents have full knowledge of the aspects analysed in each destination compared. Despite the dichotomy, the reality is that the majority of indicators of destination competitiveness require a combination of both quantitative and qualitative measures for a holistic measurement (Abreu-Novais et al., 2016). The combination of both types of data is achieved by only a few initiatives, such as the Travel and Tourism Competitiveness Index (TTCI) of the World Economic Forum (WEF) from 2007 to 2019.

The second matter concerning TDC measurement refers to the methods and tools used. There are several methodologies registered in the literature to create composite indicators to measure TDC, each with its own strengths and weaknesses. These methodologies are chosen according to the researcher's intentions and study objectives. For instance, Principal Component Analysis (PCA) is one of the most commonly utilized methodologies due to its ability to reduce information (Shousheng et al., 2012; Goffi & Cucculelli, 2018), as well as Factor Analysis (Dwyer et al., 2004) and Cluster Analysis (Gooroochurn & Sugiyarto, 2005; Claver-Cortés et al., 2007; Kayar & Kozak, 2010).

Innovative Multi-Criteria Decision Analysis approaches can be found (Carayannis et al., 2018; Gómez-Vega & Picazo-Tadeo, 2019) and other applications within the same approach, such as Multiple Attribute Utility Theory (MAUT) (Cracolici & Nijkamp, 2008), Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) (Huang & Peng, 2012), ELimination Et

Choix Traduisant la REalité (ELECTRE) (Botti & Peypoch, 2013), Analytic Hierarchy Process (AHP) (Zhou et al., 2015), and that based on a double reference-point approach (Pulido-Fernández & Rodríguez-Díaz, 2016; Rodríguez-Díaz & Pulido-Fernández, 2020). Moreover, Data Envelopment Analysis is widely used (Assaf, 2012; Wu et al., 2012; Gómez-Vega & Picazo-Tadeo, 2019) and other combinations, as in Salinas Fernández et al. (2020).

In general, it should be stated that there is no methodology designated as the one most preferred to measure TDC. The choice of methodology involves the decision-maker's preferences and depends on his/her ability to analyse the results obtained. As was stated above, a common set of steps has been developed to guarantee the quality of the proposed indices (Nardo et al., 2005a; Nardo et al., 2005b; OECD, 2008) and these steps have also been explained with detail in Mendola and Volo (2017) in selected tourism competitiveness studies.

The size of the destinations is the third topic concerning tourism competitiveness studies. It has been addressed at different levels: resorts (Hudson et al., 2004; Claver-Cortés et al., 2007); tour operator and hotel companies (Assaf, 2012); cities (Enright & Newton, 2005); municipalities (Goffi & Cucculelli, 2018); regions (Cracolici & Nijkamp, 2008), and countries (Wu et al., 2012; Assaf & Dwyer, 2013; Knežević et al., 2016). Goffi and Cucculelli (2018) present a detailed list of applications for diverse sizes of destinations. However, the indicators selected should guarantee the comparability of the destinations.

The number of destinations is the fourth subject indicated. This depends on the range of the study, the stakeholders' necessities, and on which places are considered to be the destination's competitors. There are studies focused on a single destination (Komppula, 2014; Drakulić Kovačević et al., 2018) in which the researchers want either to determine whether a destination is competitive according to the respondents' considerations and/or indicator values, or to test a new TDC model (Hong, 2009). The number of destinations may increase up to three (Li et al., 2013; Zehrer et al., 2017), ten (Gursoy et al., 2009), or more (Barros et al., 2011). The amount can be higher (Bolaky, 2011; Assaf & Dwyer, 2013; WEF, 2017; Goffi & Cucculelli, 2018; WEF, 2019) and depends on the researcher's intention. Studies with a greater number of destinations are mostly associated with TDC rankings (Jackman et al., 2011; WEF, 2017). Furthermore, the number of destinations can be conditioned by information availability. For instance, in TDC studies, while most developed countries do collect reliable tourism data, less developed countries struggle to provide accurate and timely statistics (Mendola & Volo, 2017) and fewer of these countries therefore tend to be considered.

Additionally, the author would like to highlight a subject related to the time span for which the TDC is analysed. Most studies use data from a single moment. This implies obtaining a unique measure of each indicator (Gooroochurn & Sugiyarto, 2005; Claver-Cortés et al., 2007; Gomezelj & Mihalic, 2008; Kayar & Kozak, 2010; Shousheng et al., 2012; Wu et al., 2012; Assaf & Dwyer, 2013; Assaker et al., 2014; Pulido-Fernández & Rodríguez-Díaz, 2016). In these studies, TDC is viewed as a static phenomenon because its value represents the state of the destination at a specific moment in time. This approach is useful for the evaluation of the destinations and their comparison with respect to other destinations. However, it cannot be employed to analyse a destination's performance over time, unless the same measurement is carried out with the same set of indicators at another moment in time.

Meanwhile, others, fewer studies use data from a period (Bolaky, 2011; Croes, 2011; Assaf, 2012) and incorporate measures for the same indicators in a time span, as in Croes (2011), in such a way that it is not the direct value of the indicators that is analysed, but their performance over a period. Performance refers to the evolution of the tourist sector (de la Peña et al., 2019) and performances of destinations have been influenced by their competitiveness (Crouch & Ritchie, 1999; Ritchie & Crouch, 2000; Dwyer & Kim, 2003; Enright & Newton, 2004). Consequently, it is possible to assume that a higher-than-average rate for the indicators analysed could be considered a gain of competitiveness (Dupeyras & MacCallum, 2013). Indicator growth rates are approximate to the concept of competitiveness because they indicate the change of those levels acquired over time (de la Peña et al., 2019).

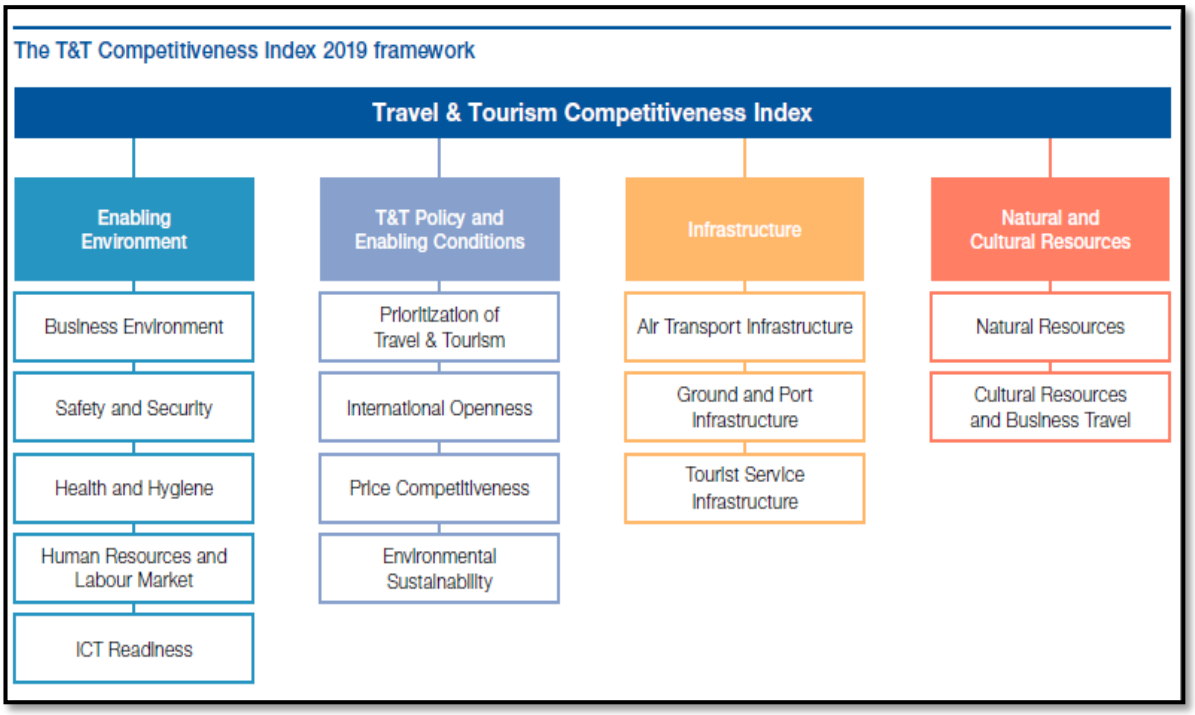
Given the fact that there is still no research aimed at measuring TDC that addresses all the methodological aspects described above, the most noteworthy contribution in this area is perhaps the Travel and Tourism Competitiveness Index (TTCI), which is a composite indicator of the competitiveness of the main tourist destinations in the world, and is regularly produced and published by the World Economic Forum (WEF) in The Travel & Tourism Competitiveness Report (TTCR) (Gómez-Vega & Picazo-Tadeo, 2019). It includes both hard and soft data, and a simple, easily comprehensible method, despite the high level of criticism. It considers the destinations at the country level, in order to obtain all the information required and involves the highest number of destinations of all those existent initiatives, and depends on the availability of information on the countries. This index is described below.

1.3.1 The Travel and Tourism Competitiveness Index (TTCI) of the World Economic Forum (WEF)

The Travel and Tourism Competitiveness Report is developed by the World Economic Forum (WEF). This report aims to provide a comprehensive strategic tool to measure the factors and policies that make the development of the tourism sector attractive in various countries, by enabling all stakeholders to work jointly to improve the competitiveness of the tourism industry in their national economies, thereby contributing towards growth and national prosperity. This report, which addresses a different problem of global tourism each year (such as tourism and economic development, environmental sustainability, and overcoming the crisis), also includes a global Tourism Competitiveness Index (TTCI) (WEF, 2019).

It is the most popular TDC index (Croes & Kubickova, 2013; Gómez-Vega & Picazo-Tadeo, 2019), and has a strong international reputation (Pulido-Fernández & Rodríguez-Díaz, 2016) among the initiatives developed to measure TDC. The first edition was published in 2007 and has been published biannually. The last edition corresponds to 2019. The TTCI is composed of a number of "pillars" of T&T competitiveness. Each pillar includes a set of qualitative indicators, derived from the Executive Opinion Survey (Browne et al., 2014), and quantitative data, obtained from statistical sources of information, which are highly useful in guaranteeing the veracity of the index. The composition of the index (2019) is as follows:

Figure 1. The Travel and Tourism Competitiveness Index



Source: WEF (2019).

In order to calculate the TTCI, the objective indicators are normalized for the conversion of each hard data indicator into the 1-to-7 scale as follows:

$$6 \times \left(\frac{country\ score - sample\ minimum}{sample\ maximum - sample\ minimum} \right) + 1$$

The sample minimum and sample maximum are the lowest and highest scores of the overall sample, respectively. For those hard data indicators for which a higher value indicates a worse outcome (e.g., fuel price levels), the normalization formula converts the series to a 1-to-7 scale and reverses it, so that 1 and 7 still correspond to the worst and best, respectively:

$$-6 \times \left(\frac{country\ score - sample\ minimum}{sample\ maximum - sample\ minimum} \right) + 7$$

Each of the pillars is calculated as an unweighted average of the individual component variables. The sub-indices are then calculated as unweighted averages of the included pillars (WEF, 2017). The calculation process has remained invariable since its first publication. The Table 1 summarizes the editions of the TTCI showing the number of sub-indices, pillars, indicators, countries involved, and, moreover, the number of destinations from the Caribbean Region included in each edition (Caribbean).

Table 1 Composition of the TTCI editions

Year	Sub-indices	Pillars	Indicators	Countries	Caribbean
2007	3	13	58	124	14
2008	3	14	71	130	16
2009	3	14	73	133	16
2011	3	14	75	139	15
2013	3	14	79	140	16
2015	4	14	90	141	17
2017	4	14	90	136	14
2019	4	14	90	140	13

Source: Author's own.

This index was initially published with three sub-indices comprising 13 pillars (WEF, 2007). The additional pillar in 2008 corresponds to a modification of the pillar "Natural and Cultural Resources," which was divided into its two subcomponents to create the two distinct pillars of "Natural Resources" and "Cultural Resources". This provides a more nuanced and useful description of the strengths and weaknesses of countries, as these are in reality two completely different types of resources, with a diverse set of policy implications in many cases (WEF, 2008). Moreover, in 2015, a new sub-index was added, as a result of the fragmentation of the sub-index "Natural and Cultural Resources" into two different sub-indices: "Natural Resources" and "Cultural Resources and Business Travel". This fragmentation was due to the

latest editions of the TTCI having begun the exploration of the complex relationship between competitiveness and sustainability as measured by its social and environmental dimension (WEF, 2015). As a result, this edition begun exploring the complex relationship between competitiveness and sustainability as measured by its social and environmental dimension (WEF, 2015).

The number of indicators refers to all the information employed to create the index, without the inclusion of the aggregation decisions made during its construction; that is, the combination of one or more variables. This number has risen continuously, which means that each edition includes more relevant information concerning TDC. While the first edition comprises only 58 (Objective and Subjective) indicators, the 2015, 2017, and 2019 editions included 90 indicators, of which two thirds are statistical and one third are data from the Executive Opinion Survey.

The amount of countries included has also risen but, unfortunately, the number of Caribbean countries has decreased in the latest editions. Three of the five countries omitted in the edition from 2017 with respect to 2015 were countries from the Caribbean Region. Furthermore, the same occurs with the Caribbean countries omitted in the 2019 edition with respect to that of the 2015. Their absence was caused due to difficulties in providing all the information required (WEF, 2017), which is one of the negative aspects indicated previously.

In a general way, measurements involved in the index are constantly improving. As a consequence, the approach to calculating a number of the indicators used in the TTCI has changed over the time. These changes do not modify the concepts or the overall methodology employed to compute the TTCI, yet they introduce a certain variability that does not accrue to actual country performance. While ensuring comparability, full transparency on the methodology is central to the soundness of the TTCI research framework (WEF, 2017). Detailed information of the changes made in the TTCI is included in each edition.

Despite its wider use as a reference for diverse TDC studies (e.g., Wu et al., 2012; Pulido & Rodríguez, 2016; Gómez-Vega & Picazo-Tadeo, 2019; Rodríguez-Díaz & Pulido-Fernández, 2020; Salinas Fernández et al., 2020, etc), the TTCI has faced extensive criticism, especially with regard to methodological issues (Lall, 2001; Crouch, 2007b; Squalli et al., 2008; Mazanec & Ring, 2011; Wu et al., 2012; Croes & Kubickova, 2013). One of the main criticisms of this interesting tool has to do with the arbitrary weighting of the variables within each pillar (Pulido-Fernández & Rodríguez-Díaz, 2016). These authors also consider it to be a major shortcoming that this index allows a country to be considered competitive for tourism, although it has several

very poorly valued indicators. In this regard, the use of simple (unweighted) means may not be appropriate since the raw indicators are not expected to all have the same effect on competitiveness. Moreover, the pillars used by the WEF are made up of different numbers of indicators, ranging from 3 to 12 (2017 Edition). In practice, this means that certain indicators contribute more to the aggregated indicator than do others (Gómez-Vega & Picazo-Tadeo, 2019).

Other points of criticism include: (*i*) the composition of the index, especially the way in which hard data and survey data are combined (Lall, 2001; Squalli et al., 2008); (*ii*) the use of weak theoretically justified variables (Lall, 2001; Crouch, 2007a); (*iii*) the comparability of countries on different levels of development (Lall, 2001; Crouch, 2007a); (*iv*) the arbitrary weighting of variables (Crouch, 2007a; Squalli et al., 2008); and (*v*) the reliability and validity of the index and the statistical methods employed to demonstrate the usefulness of the index (Lall, 2001; Crouch, 2007a). Lall (2001) points out that the statistical analysis of the index fails to allow for strong causal or policy conclusions: it simply shows that a large number of variables move together with each other and nothing more (Mazanec & Ring, 2011).

Croes and Kubickova (2013) pointed out the different nature of the variables used in each indicator and criticise the TTCI for its use of variable inputs (instead of output variables) since this may lead to misleading conclusions. Their research indicates that the absence of output variables neglects the analysis of the management capacity of the destination. The index does not include indicators referring to the tourism industry outputs, such as number of visitors, international income from tourism, and the T&T contribution to GDP, which are results of the behaviour of the destinations. A good marketing or commercialization strategy may trigger high revenue derived from the tourist activity, even when destination possesses a smaller number of heritage resources than do its competitors.

These authors also argued that the TTCI appears to be more of a systematic collection (albeit comprehensive) of data than a model that reveals clear testable association between variables, thereby facilitating inferential analysis. Furthermore, it requires a broader amount of information, which is problematical to achieve for all the destinations. While most developed countries do collect reliable tourism data, less developed countries struggle to provide accurate and timely statistics (Mendola & Volo, 2017). Data requirements are difficult if not impossible to fulfil. Information is hard to come by in developing countries since its collection is costly and time consuming (Croes & Kubickova, 2013). This is the underlying reason for the exclusion

of three destinations of the Caribbean from the latest editions of the TTCI, published in 2017 and in 2019.

Furthermore, in this research, other issues arise from the analysis of the TTCI. One issue involves the authors' agreed random selection of maximum and minimum values for the standardization of the dataset in order to prevent the influence of outliers. However, this hides the real distance between the destinations in certain indicators. Second, there is an issue regarding missing values. Once a destination does not provide a certain element of data, the calculus contains only those indicators for which the data is available, without the application of a missing data imputation approach. As a result, those indicators from the same pillar for which the values are available obtain a higher weight. This is an undesirable characteristic for composite measures since it affects the scores of the units under evaluation. Moreover, as a consequence, certain economies may strategically exclude low-scoring indicators from the index and, therefore, obtain greater weights in the remaining indicators contained in the pillar. Finally, these methodological decisions that influence the values and the credibility of the TTCI are consequences of the influence of the destination size on the proposed method. This also constitutes an undesirable aspect in the construction of composite indicators.

Despite all the criticism, the TTCI remains a valuable tool for the measurement of the performance of a destination compared to its competitors (Croes & Kubickova, 2013). Furthermore, it presents certain advantages when examining competitiveness at the level of a country. First, the method provides a longitudinal perspective; it is consistent over time. Second, the TTCI allows for comparisons between countries: the same variables are used and measured (Andrades & Dimanches, 2017).

It is one of the most commonly used and feasible indices thanks to its credibility, data accuracy (Abreu-Novais et al., 2016), and the desirable combination of hard and soft data, which is very limited to a small number of initiatives. It has a strong international reputation (Pulido-Fernández & Rodríguez-Díaz, 2016), and is recognized as a useful source of comparative information in the T&T sector (Wu et al., 2012). This index is increasingly used by researchers as a source of data for the development of studies on TDC (Kayar & Kozak, 2010; Wu et al., 2012; Croes & Kubickova, 2013; Dwyer et al., 2014; Webster & Ivanov, 2014; Pulido-Fernández & Rodríguez-Díaz, 2016; Gómez-Vega & Picazo-Tadeo, 2019; Rodríguez-Díaz & Pulido-Fernández, 2020; Salinas Fernández et al., 2020).

The information provided by the Travel and Tourism Competitiveness Report is highly useful in identifying the competitive advantages and disadvantages of a country as a tourism destination and in allowing the private sector to create public policies and actions that boost tourism activity in that country. In fact, it is increasingly used by researchers as a source of data (either in the form of indicators used, the pillars in which these indicators are grouped, or the final results) for the development of studies on TDC (Gursoy et al., 2009; Kayar & Kozak, 2010; Ivanov & Webster, 2013; Leung & Baloglu, 2013; Dwyer et al., 2014; Webster & Ivanov, 2014; Pulido-Fernández et al., 2015; Pulido-Fernández & Rodríguez-Díaz, 2016; Gómez-Vega & Picazo-Tadeo, 2019), among others.

From a destination point of view, its presence in the Travel and Tourism Competitiveness Index (TTCI) demonstrates strength. It also represents the possibility of providing reliable information concerning its tourism industry. Once a country is ranked prominently in the index, it may become famous and receive a great deal of attention from various policy-makers or stakeholders (Wu, 2011). The stakeholders include tourists, who use international rankings and social media information as a source of information to select a destination. It is therefore important for a destination to be included in the index.

Despite the major importance of being included in the index, the wider amount of information required for its creation remains the highest barrier for the majority of countries. The most highly affected destinations are those in developing countries for which tourism appears as the main source of income. Representative of these destinations are those in the Caribbean Region, where tourism is the leading sector. This is the case study region for the present research.

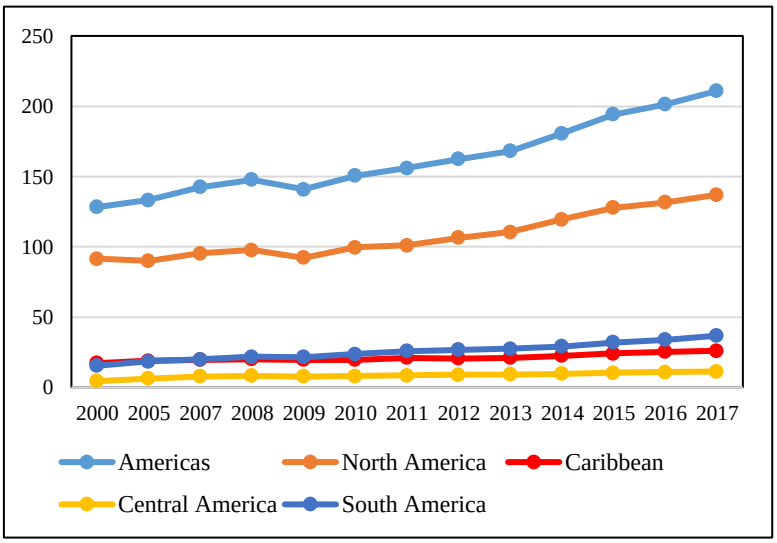
1.4 The region case study: The Caribbean

According to the UNWTO classification, the Americas comprise: North America (Canada, the US, and Mexico), with an approximate extension of 21,096,638 km^2, representative of almost 48.7% of the Continent; Central America (Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, and El Salvador), covering 522,760 km^2, 1.2% of the region; the Caribbean (32 medium-sized and small islands), with a total area of approximately 233,937 km^2, 0.54% of the region's extension; and South America (19 countries) which comprise 18,220,000 km^2, approximately the 42% of the total area.

International tourist arrivals to the continent have maintained an increasing tendency in the time span 2000 – 2017 (Figure 2), with a small decrease in 2009, associated to the financial crisis. North America is the most visited region, accounting for between 71% (2000) and 65% (2017)

of the total number of visitors to the Americas. The Caribbean, with the smallest land mass, was the second most visited destination in the Americas in 2000 (13.34%). Despite initial behaviour and the subsequent increasing tendency of visits to the continent, the Caribbean has also gradually increased its number of tourists, but to a lesser extent than has South America. South America is currently in the second position, with approximately 17.4% of the visitors to the region, with 12.33% and 5.33% for the Caribbean and Central America, respectively.

Figure 2. International Tourist Arrivals (in millions)

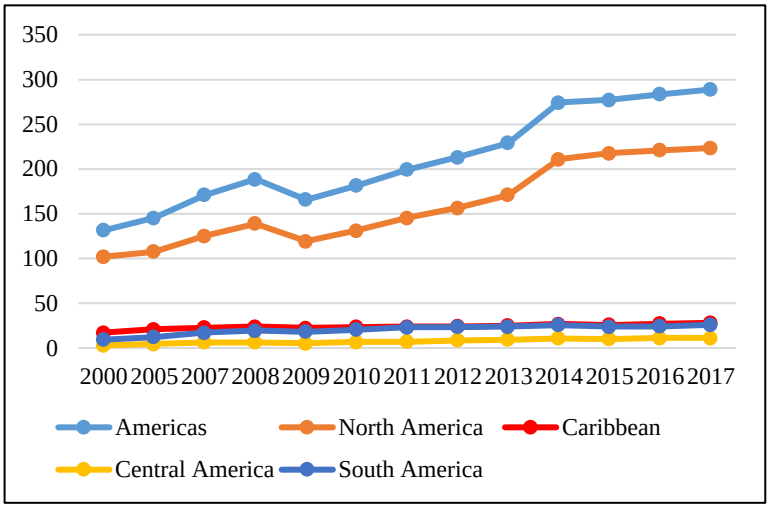


Source: Author's own based on data from UNWTO.

Considering the income from international tourism (Figure 3), North America remains the most representative region. The continent's behaviour regarding this indicator is similar to that of North America. Central America generates the least income, while the Caribbean, despite having lost representativeness in the number of tourists, still maintains second position in the area with respect to income from international tourism.

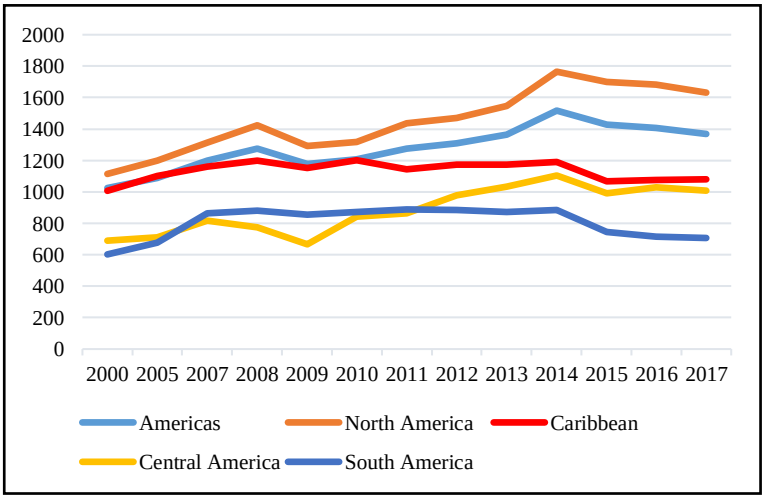
The average income per arrival (Figure 4) confirms that the North American tourist offer is the most expensive. As a result, North America's behaviour in this regard is the value that guides the overall income from tourism of the region. The Caribbean is the second most expensive region. Its highest values were obtained from 2008 to 2010 (between US$ 1196.00 and US$ 1201.38 per visitor). Only the values for the Caribbean and for South America rose in this period. However, the recovery of the US and the active hurricane seasons from 2012 and 2013 caused a decline of this indicator for the Caribbean, which remains the second highest in the continent. The high value between 2008 and 2010 has been decreasing, and the lowest point was reached in 2015 (US$ 990.20), which was still above those of Central and South America. However, a small recovery could be noticed in 2016 and 2017 for the Caribbean region.

Figure 3. Income from International Tourism (in millions of US$)



Source: Author's own based on data from UNWTO.

Figure 4. Income per Tourist Arrival



Source: Author's own based on data from UNWTO.

The average expenditure per tourist in South America demonstrates that its increase in the number of visitors can be associated to a pricing strategy and to the reduced cost of travel due to the existence of land borders between all these countries. Moreover, it could also be associated to the regional organizations which arose in the period, such as: the Bolivarian Alliance for the Peoples of our America (ALBA-TCP, 2004); the Financial Action Task Force of Latin America (GAFILAT, 2006); the Mesoamerica Integration and Development Project (PM, 2008); and the Community of Latin American and Caribbean States (CELAC, 2010).

This overview demonstrates the strength of the tourism industry of the Caribbean Region. This territory, with less than 0.6% of the continental area, gains the second-highest income from international tourism and average income from tourism per visitor. Additionally, these small island destinations rely on tourism as their main source of economic income. Considering just

the Caribbean region, the Caribbean Tourism Organization (CTO) reported that, for the first time ever, the 30.6 million mark in stay-over arrivals was reached in 2017, (some 700,000 more visitors than the 29.9 million of 2016), even as the region battled the effects of hurricanes Irma, Maria, and Harvey, which lashed parts of the United States, the Caribbean's primary market.

Stay-over arrivals had a strong performance during the first half of 2017, growing by an estimated 4.8%. However, there was a major slowdown in the second half of 2017 due to the impact of the September hurricanes, after which tourist visits declined by 1.7%. As a result, overall tourism visits increased by only 1.7% to reach 30.1 million visits for the full year. This marks the 8th consecutive year of growth, albeit slower than the average global growth rate of 6.7%. This is an indication that stability has returned to the main tourist markets, and consumer confidence continues to grow (Jamaica Tourist Board, 2016). The region benefitted from the high demand for outbound travel from the United States, better economic conditions globally, and an increase in airlift between the main markets and the region.

Tourist arrivals showed uneven growth between destinations. Several countries reported double-digit increases in 2017, including Saint Lucia (11%), Belize (10.8%), and Bermuda (10.3%), while the hurricane-impacted countries recorded decreases ranging from -18% to -7%. The most visited countries in the region were Mexico, the Dominican Republic, Cuba, and Puerto Rico, in descending order. The major Caribbean sub-regions that reported declines included the US Territories (-7.9%), the Dutch Caribbean (-6.6%), and the Organization of Eastern Caribbean States (OECS) (-3.6%). The grouping dubbed Other Caribbean (comprised of Cancun, Cozumel, Cuba, the Dominican Republic, Haiti, and Suriname), which accounts for almost half of all arrivals to the region, recorded an increase of 6.0% and the Caribbean Community (CARICOM) also reached an increase of 1.7% (Pasternak, 2018).

Most major source markets recorded growth. The U.S. market grew by approximately 0.5% to reach an estimated 14.9 million visits to the region. Arrivals from the European market totalled 5.8 million and improved by an estimated 6.2%, which constitutes the strongest growth in the main markets. Visits from the Canadian market rebounded in 2017, and grew by 4.3% compared to a decline of 3.1% in 2016. The country's strong economic performance and increased seat capacity to the region helped support this recovery. In contrast, the South American and Caribbean markets, which declined by 6.5% and 1.3% respectively, reflected weak economic conditions.

Cruise passenger arrivals also set a new landmark in 2017. Despite the hurricanes, cruise arrivals reached an estimated 27.0 million visits to the region, 2.4% higher than in 2016. The Caribbean Cruise again headlined the industry's success. It accounted for more than a third (35.4 percent) of the global deployment capacity market share. Moreover, the region's yields and ticket pricing continued to increase, aided by a strong U.S. economy and consumer sentiment (F-CCA, 2018). The cruise passenger performance mirrors the performance of tourist arrivals, since it grew strongly (4.6%) in the first half of 2017, but contracted marginally (-0.4%) in the second half of the year. Cruise passenger arrivals fell dramatically in September by some 20%. However, growth resumed in October, which saw a 2% increase. Consistent with increases in stay-over and cruise visits, total visitor expenditure is estimated to have increased by approximately 2.6% to reach US$ 37.0 million in 2017. This performance marks the eighth consecutive year of growth. Overall, stay-over visitors spent an estimated US$34.2 million in 2017 (or US$1,230 per trip) compared to US$1,129 per trip in 2016. Central America also registered positive results at almost all the destinations, led by Nicaragua, thanks to the strong demand of regional markets (UNWTO, 2018).

There are issues that influence the decision regarding what constitutes a competing destination for the purpose of competitiveness assessment. For instance, the traditional view that competitors are those destinations with geographical proximity seems to be outdated, since improved access, reduced travel times and reduced costs have opened up a wider array of competitor destinations (Abreu-Novais et al., 2016).

According to destination size, generally, the notion of competitiveness in tourism has been applied at various levels: resorts (Hudson et al., 2004), cities (Enright & Newton, 2005), regions (Cracolici & Nijkamp, 2008; Chen, C. M. et al., 2011), and countries (Kozak et al., 2010; WEF, 2017, 2019). For the purpose of most existing destination competitiveness studies, however, a tourism destination is conceptualized as a defined geographical region which is understood by its visitors as a unique entity, with a political and legislative framework for tourism marketing and planning (Buhalis, 2000). Given this explanation, this research considers the country level, due to information accessibility. Considering these criteria, for the purpose of this study, all these countries that have statistical data available in international databases and updated information in national statistics offices were considered.

For the present research, the region case study comprises 33 countries. Of these, 63.36% (21) of the countries involved are Island States and 12 (36.64%) are Continental States. According the United Nations World Tourism Organization (UNWTO) classification, all these countries

belong to the Caribbean or Central American Region, except for Mexico (North America), Guyana, Suriname and Venezuela (South America) (Table 2; Figure 5).

Table 2. List of Countries from the region

Type	Name	WTO	WTTC	CTO	CSA	CARICOM	CELAC
IS	Anguilla	C	C	M		AM	
IS	Antigua and Barbuda	C	C	M	MS	MS	M
IS	Aruba	C	C		AM		
IS	Bahamas	C	C	M	MS	MS	M
IS	Barbados	C	C	M	MS	MS	M
CS	Belize	CA	LA	M	MS	MS	M
IS	Bermuda	C	C			AM	
IS	British Virgin Islands	C	C	M	AM	AM	
IS	Cayman Islands	C	C	M		AM	
CS	Colombia	SA	LA		MS		M
CS	Costa Rica	CA	LA		MS		M
IS	Cuba	C	C		MS		M
IS	Dominica	C	C	M	MS	MS	M
IS	Dominican Republic	C	C		MS		M
CS	El Salvador	CA	LA		MS		M
IS	Grenada	C	C	M	MS	MS	M
IS	Guadeloupe	C	C		AM		
CS	Guatemala	CA	LA		MS		M
CS	Guyana	SA	LA	M	MS	MS	M
IS	Haiti	C	C	M	MS	MS	M
CS	Honduras	CA	LA		MS		M
IS	Jamaica	C	C	M	MS	MS	M
IS	Martinique	C	C	M	AM		
CS	Mexico	NA	NA		MS		M
CS	Nicaragua	CA	LA		MS		M
CS	Panama	CA	LA		MS		M
IS	Puerto Rico	C	C	M			
IS	St. Kitts and Nevis	C	C	M	MS	MS	M
IS	St. Lucia	C	C	M	MS	MS	M
IS	St. Vincent and The Grenadines	C	C	M	MS	MS	M
CS	Suriname	SA	LA		MS	MS	M
IS	Trinidad and Tobago	C	C	M	MS	MS	M
CS	Venezuela	SA	LA		MS		M

Source: Author's own.
Legend: (IS): Island State. (CS): Continental State, (NA): North America, (SA): South America, (C): Caribbean, (LA): Latin America, (M): Member, (MS): Member State, (AS): Associate Member; (CARICOM): Caribbean Community.

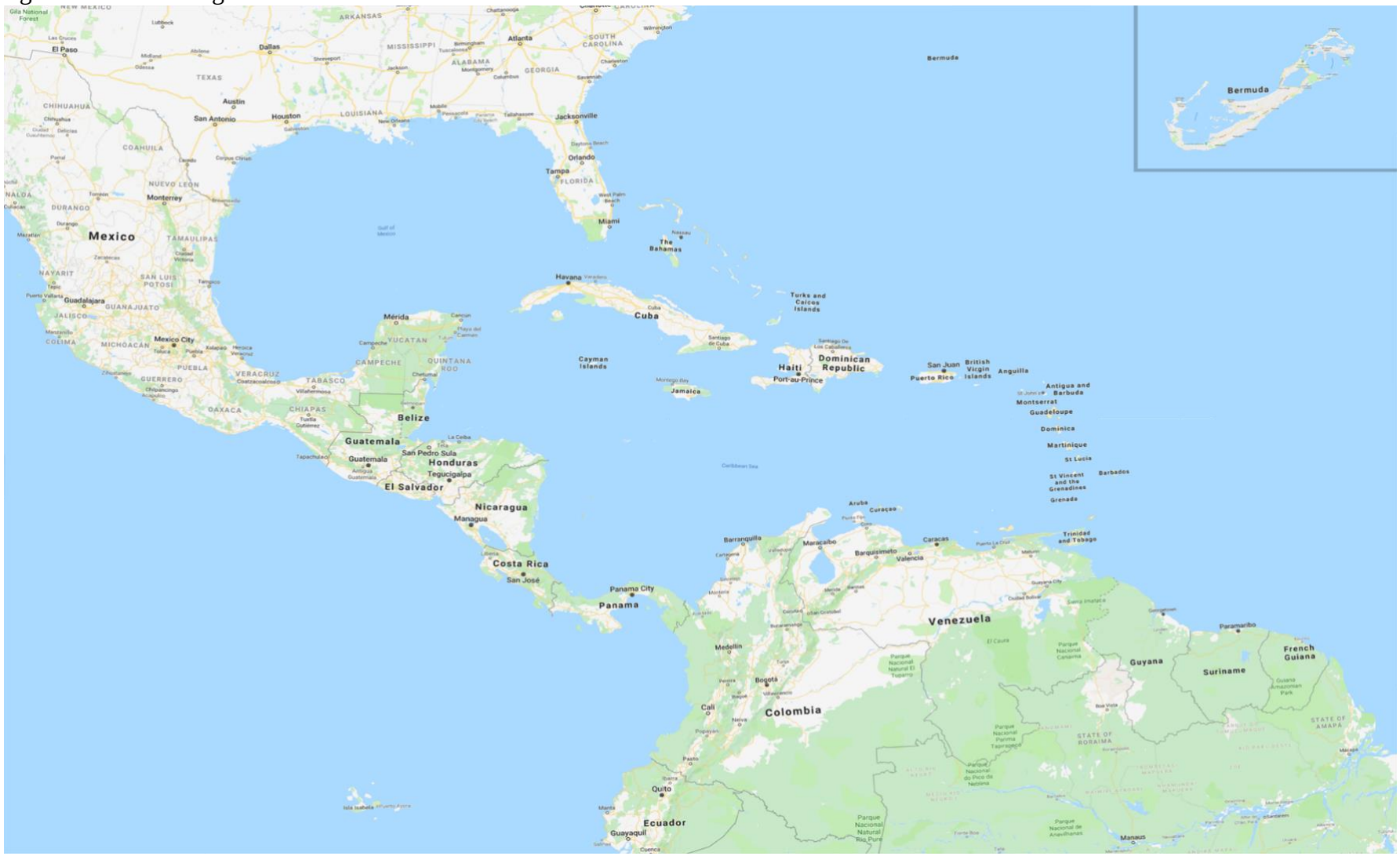
The World Travel and Tourism Council (WTTC) maintains almost the same classification but include the destinations from Central and South America in the category of Latin America. Eighteen destinations belong to the Caribbean Tourism Organization (CTO). Except for Anguilla, Bermuda, the Cayman Islands, and Puerto Rico, the remaining destinations are

Associated to or Members of the Caribbean States Association. The same number of destinations are involved in the Caribbean Community (CARICOM).

For the purpose of this study, all these countries will be grouped in the Caribbean Region, and the competitive destination approach described by Abreu-Novais et al. (2016) is considered. Other small island states of the area were not taken into account owing to the lack of information thereon. In general, for most of these countries, tourism is the main source of income. The Caribbean Region demonstrated that its diversity of cultures together with its authentic natural experiences offered numerous enjoyable, refreshing, and relaxing encounters. The country level is preferred due to the possibility of attaining the information required. Since Mexico, Colombia, and Venezuela all contain major land mass, their tourist offer is not only supported by their regions in the Caribbean Sea, in the same way as all the remaining destinations are, except for El Salvador, which is included since it is considered a close competitor.

In general, for most of these countries, tourism is the leading source of foreign exchange. They continue to be excessively reliant on their natural resources and have made a little progress in developing other tourism segments and in complementing their beach tourism with other activities (WEF, 2017). This is the most tourism-intensive region in the world with certain countries being more dependent on tourism than others (Erikson & Lawrence, 2008).

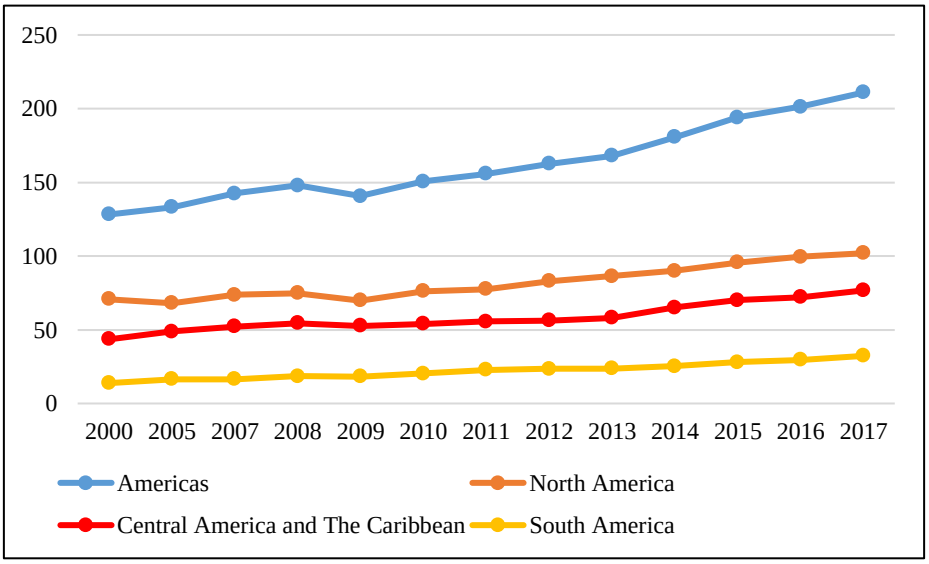
Figure 5. Caribbean Region



Source: Googlemaps

The 33 countries included in the study (hereinafter, the Caribbean) (11.9% of the continental area) account for 33.94% and 37.42% of the international visitors to the continent between 2000 and 2017, and acts as a second region within the American Continent. According to information from the World Tourism Organization (UNWTO), this region maintained a growing tendency during the period. It was less affected by the decline in the number of visitors in 2009. As a result, it is possible to assume that this group of countries had a higher tourist influx in the time registered as the most critical during the period analysed (Figure 6). In addition, starting from 2013, this group of countries had a tendency to increase more noticeably than North America, in spite of having fewer tourists. This confirms that the growth in the number of visitors to the Americas is due to the countries under analysis. Despite the augmentation of international tourist arrivals to the continent, this sub-region achieved the highest increment ratio.

Figure 6. International tourism aggregated by region (in thousands)



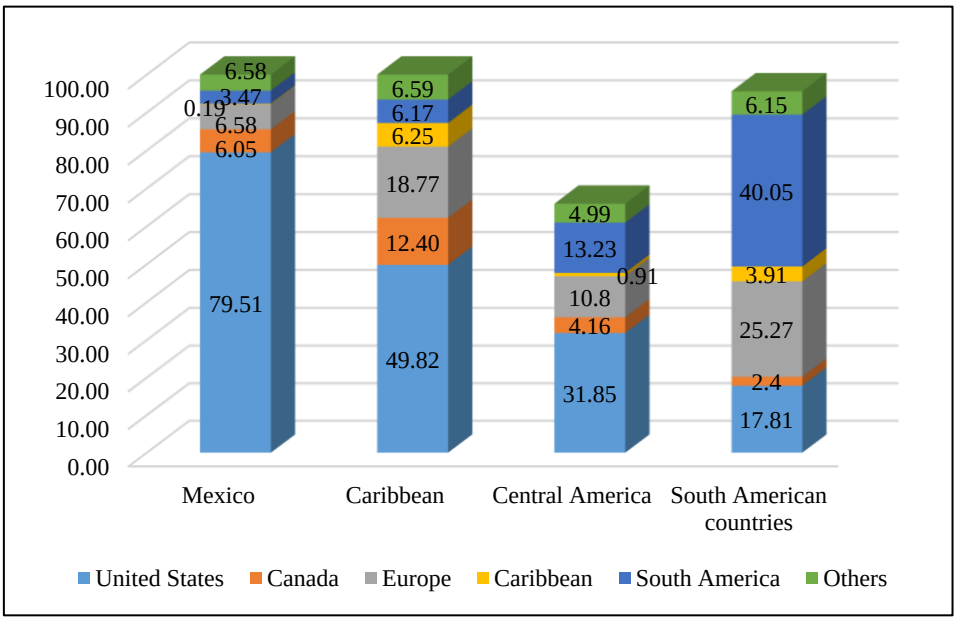
Source: Author's own based on data from UNWTO.

Figure 7 shows the tourist influx to the countries of the sample. For Mexico, the Caribbean, and Central America, the greatest influx comes from the United States, while for the South American countries under consideration, the highest number of visitors comes from this part of the continent. Europeans constitute the second highest number of tourists for the Caribbean, Central America, and South American countries.

Regarding the possibilities of Caribbean tourists in the area, a short analysis clarifies that Caribbean inhabitants hardly ever frequent the zone as tourists. For Mexico and the Central American countries, Caribbean visitors fail to reach even 1%, while for South American countries they represent 3.91%. Generally, tourists from the Caribbean are more likely to be

tourists in their own area, rather than in the rest of the continent. A glance at the main tourism receptors worldwide reveals that the presence of Caribbean tourists is small, which highlights the lack of travel possibilities for the inhabitants of the region, and justifies their greater presence as tourists in their own territory. In addition, this highlights the weaknesses in terms of economic development that they present with respect to other countries, which contributes towards explaining their scarce presence amongst providers of global tourism.

Figure 7. Tourist Arrivals by main market (%)



Source: Author's own based on data from UNWTO.

The 46.7 million international visitors who visited the region in 2016 spent US$31.4 billion which meant a total of $56.4 billion in GDP and 2.4 million jobs. Furthermore, the domestic market generates more than 25% of the region's Travel and Tourism GDP. Overall, tourism contributes 15.2% of the Caribbean's GDP and 13.8% of its employment. However, in many Caribbean countries, the sector accounts for over 25% of their GDP, which is more than double the world average of 10.4% (WTTC, 2018a). In relative terms, this was the region with the highest total contribution of Travel and Tourism to GDP and to Employment in 2017 worldwide. Moreover, this was the area for which Visitor Exports and Capital Investment was proportionally the highest. In contrast, the region was placed among the lowest for Business Travel and Tourism Spending and in Domestic Spending on travel and tourism (WTTC, 2018b).

According to the WTTC information, 11 countries from the region were recorded as being among the top 35 most tourist-dependent destinations worldwide (Jackman et al., 2011). Starting in 2016, three more countries of the area were included within this sample of 35, and measured for the contribution of the tourism industry to their GDP. Furthermore, 11 of these

countries featured at least once amongst the top ten countries worldwide regarding certain issues measured by the WTTC. This includes absolute and relative terms, and countries with the fastest growing or the strongest growth in an indicator (WTTC, 2018a). These countries are Anguilla, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Costa Rica, Honduras, Mexico, Panama, and Saint Lucia. This representativeness has been maintained for the last ten years (e.g., Croes, 2011; Jackman et al., 2011), which provides evidence of the dependence of this region on tourism (World Bank, 2005).

The World Economic Forum (WEF, 2015, 2017, 2019) reports that in the Caribbean, common T&T issues include further leveraging of natural and cultural resources and air transport infrastructure and, with certain exceptions, include the improvement of the capacity for connectivity. The T&T Competitiveness Index suggests that most Caribbean economies rely extensively on their famous beaches but appear to promote their cultural resources insufficiently. More efforts in promoting and leveraging their cultural heritage could further improve the T&T competitiveness of these economies, while the lower-than-expected performance of Caribbean countries in the Natural Resources pillar can be partly explained by their lack of UNESCO natural heritage sites and a low percentage of their land being officially protected.

Moreover, in the edition of 2019, compared to 2017, the Central America sub-region (comprising the Caribbean and Central American countries) was more competitive than the South America sub-region and continues to be less competitive than North America. However, it did experience minimal TTCI score improvement from 2017 to 2019 (WEF, 2019). The sub-region scores higher than both the South America and global averages on international openness, T&T prioritization, air transport, and tourist service infrastructure, but lower on safety, health, ICT readiness, and cultural resource indicators. In particular, improvement in the indicators in the T&T Prioritization and Enabling sub-index pillars have been the primary drivers of the enhanced competitiveness of the sub-region. This includes slightly greater international openness, which constitutes the sub-region's most significant advantage relative to the global average, and far greater price competitiveness: an area where many of its countries trail far behind. The sub-region also improved safety and security performance, which is the area with the largest gap compared to global averages.

Central America's greatest advantage over South America is its more highly developed infrastructure, especially air and ground transport infrastructure. Nevertheless, the region lags

behind global competitors on the latter category of "Natural and Cultural Resources". In addition, the sub-region scores far higher in business environment (WEF, 2019).

The Dominican Republic is the most improved country in the sub-region (76th to 73rd), thanks to above-average regional and global improvement in 11 pillars. Panama had the sub-region's steepest decline (35th to 47th), with falls in nine pillars, including the region's greatest drop on ground infrastructure (40th to 53rd) due to reduced ground transport efficiency (40th to 46th) and the inclusion of railroad data in which it ranks very low (98th). The lowest-ranked country is Haiti (133rd), where underdevelopment and a relatively recent major earthquake has led to poor overall infrastructure (130th). The country also lacks developed natural (138th) and cultural (125th) resources, a major disadvantage in a region where many countries excel in such areas.

Venezuela experienced the world's greatest deterioration in T&T competitiveness (104th to 117th). This is unsurprising given the nation's current instability and economic woes. An already poor enabling environment, including security conditions (137th), worsened further, with falls in health (80th to 86th), business (136th to 140th) and labour (116th to 127th) conditions. Additionally, T&T policy and conditions (118th to 133rd) and overall infrastructure (109th to 117th) have moved it even further behind the global average.

1.5 Conclusions

In this chapter, various issues regarding tourism destination competitiveness are addressed. The first is related to the non-unanimously agreed definition of the construct, viewed from the offer and the demand sides, involving economic, political, social, cultural, technological, and environmental aspects, which demonstrates its relative and multi-dimensional character. Notwithstanding, the recent literature does not attempt to make any new contributions to the concept, and each author assumes an existent definition. As a consequence, it is recognized that those existent definitions embrace all the topics concerning TDC.

Second, the existence of a broader set of definitions may cause the presence of diverse models to explain TDC. Those existent models comprise factors and indicators of tourism competitiveness, all with their pros and cons. However, there is an agreement that the construct comprises economic, social, cultural, and environmental dimensions and, according to their use in the literature, it can be stated that Ritchie and Crouch's model of destination competitiveness remains the most comprehensive and rigorous of all the models currently available.

Along the same lines, simple and composite indicators appear as the most feasible tools to measure TDC. The number of indicators varies depending on the study, and their ideal number

is always a matter of discussion (Dupeyras & MacCallum, 2013) given the inexistence of a common set of indicators.

Additionally, the development of different approaches to create composite indicators applied to tourism competitiveness demonstrates the importance of the topic. As a consequence, there are also diverse methodologies of which no single methodology signalled as the most appropriate to measure TDC. Researchers and practitioners have identified several steps associated to the construction of the composite indicators aimed at guaranteeing their quality and usefulness.

The non-agreed exact number of indicators and the presence of diverse methods triggered the presence of a plethora of indices and TDC rankings. The most reliable and commonly used index is the TTCI. This index has not addressed all the problems associated to TDC and, additionally, has been extensively criticised. However, this index is highly useful in identifying the competitive advantages and disadvantages of a country as a tourism destination and in allowing the private and public sectors to create public policies and actions that boost tourism activity in that country.

Inclusion in the TTCI demonstrates the destination's strength, and the possibility of providing reliable information concerning its tourism industry. Despite its importance, this index demands a high quantity of information that is not easily achieved by developing countries, such as the destinations in the Caribbean region. This is the most intense and tourism-dependent region worldwide and, therefore, the inclusion of these destinations in the index provides them with more representativeness and attention from various policy-makers and stakeholders. In the following chapters, various methodologies are provided to measure tourism destination competitiveness and to compare the results with those from the TTCI in order to ascertain whether it is feasible to attain an index with similar outputs.

CHAPTER 2. METHODOLOGICAL PROPOSALS TO MEASURE TOURISM DESTINATION COMPETITIVENESS. A STATIC APPROACH

2.1 Introduction

Since the first models of tourism destination competitiveness emerged, a significant number of researchers have focused on its empirical and practical measurement. This stream of research is particularly critical because the evaluation of the competitiveness of particular destinations constitutes one of the ultimate objectives of the study of destination competitiveness (Croes, 2011). In order to assess destination competitiveness, researchers have diagnosed the competitive positions of a specific destination or groups of destinations using a wide range of approaches, tools, and simple and specific indicators (Bahar & Kosak, 2008; Abreu-Novais et al., 2016).

The measurement of tourism destination competitiveness is directly linked to composite indicators. The goal is to evaluate tourism competitiveness, since this measurement can contribute towards prioritizing the actions planned and the resources allocated in order to benefit the sector (Salinas-Fernández et al., 2020), and also towards identifying the position that a certain destination holds within the tourist market worldwide (Pulido-Fernández & Rodríguez-Díaz, 2016; Gómez-Vega & Picazo-Tadeo, 2019).

The literature reveals the existence of several studies dedicated to this end (e.g., Gooroochurn & Sugiyarto, 2005; Botti & Peypoch, 2013; Croes & Kubickova, 2013; Parra-López & Oreja-Rodríguez, 2014; Pulido-Fernández & Rodríguez-Díaz, 2016; de la Peña et al., 2019; Gómez-Vega & Picazo-Tadeo, 2019; Rodríguez-Díaz & Pulido-Fernández, 2020; Salinas-Fernández et al., 2020), which demonstrates the importance that composite indicators have gained in the measurement of destination competitiveness and the relevance of secondary data in attaining this goal (e.g., Hanafiah & Zulkifly, 2019; Hossain & Islam, 2019; Kubickova & Martin, 2020). Nevertheless, the progress presented to date reveals, among other factors, certain limitations regarding the selection of evaluation variables and the calculation of their respective weights (Carayannis et al., 2018), the methodology employed to aggregate the information, and the explanatory power of the results, among others.

For composite indicator studies, a single quantitative measure of tourism destination competitiveness remains elusive owing to difficulties in: its definition, what to include, accounting, comparing different impacts in commensurate terms (Buckley 2009), and its multi-criterial character due to the wide range of aspects this concept encompasses. Nevertheless,

several methods to create composite indicators have been developed (Parra-López & Oreja-Rodríguez, 2014; Abreu-Novais et al., 2016; Gómez-Vega & Picazo-Tadeo, 2019; Mazziotta & Pareto, 2019; Somarriba & Zarzosa, 2019; Valcárcel-Aguiar, Beatriz et al., 2019) and it is demonstrated that no method has yet been recognized as the most suitable for this purpose (Nardo et al., 2005a). The present chapter aims to demonstrate the feasibility of three methodologies for the measurement of TDC as an alternative approach to the Travel and Tourism Competitiveness Index and, from there, to propose a regional ranking of tourism destination competitiveness with the inclusion of other destinations from the region that are currently outside the TTCI. To this end, two separate studies are carried out.

The first study involves the 17 destinations from the region which are included in the TTCI index. The data employed corresponds to the indicators included in the 2015 edition of the TTCI. This edition is that which contains the highest number of destinations from the Caribbean from among all those present. The 17 destinations involved are divided into five islands and 12 continental states. The proposed methods combine Principal Component Analysis (Gooroochurn & Sugiyarto, 2005; Mazziotta & Pareto, 2019), the DP_2-Distance (Pérez, V. et al., 2016; Salinas Fernández et al., 2020), Goal Programming (Blancas et al., 2010a), and Data Envelopment Analysis (Gómez-Vega & Picazo-Tadeo, 2019). These methodologies have been previously employed to create composite indicators in tourism (Blancas et al., 2010b; Pérez, V. et al., 2016), and in others fields aside from tourism (Valcárcel-Aguiar, B. & Murias, 2019). This demonstrates their ability to obtain reliable composite indicators.

The first method, called the DP_2-Distance indicator, was initially developed by Pena (1978) to measure the evolution of social welfare, and it also has applications in other fields, such as political participation (Ivaldi et al., 2017) and health (Martín et al., 2016). This method is objective and eliminates the problems related to the duplicity of information and prevents the influence of subjective decisions in which the result may vary depending on the order of entry of the initial indicators. It has also been used as an alternative in the measurement of TDC by Salinas Fernández et al. (2020), in order to solve the problems of arising from the aggregation of variables expressed in different measurements and the assignation of arbitrary weights.

The second method was built by the combination of Data Envelopment Analysis (DEA) (Charnes et al., 1978) with the Distance-Principal Component indicator (DPC) (Blancas et al., 2010b) to create the indicator called Data Envelopment Analysis after the Distance-Principal Component (DEAPC) (Pérez, V. et al., 2016). This index is completely objective and able to identify the strengths and weaknesses of each destination in terms of competitiveness.

The third proposed methodology is the Data Envelopment Analysis after Goal Programming index (DEAGP) (Pérez, V. et al., 2017). This was calculated through the blending of DEA and the Goal Programming Synthetic Index (GPSI) (Blancas et al., 2010a), supported in Goal Programming methodology. This method was created in order to take into consideration the stakeholders' perspectives with respect to the values of the initial indicators. It is firstly subjective, because the use of goal programming enables their aspirations to be included into the dimensional synthetic indicators. The global index becomes objective in the second phase due to the application of DEA.

These methods are divided into two stages. For the DP_2-Distance, dimensional indicators are obtained with the information of the indicators of each dimension. A global index is then calculated with indicators representative of each dimension, previously selected by the methodology itself. For the last two methods, a composite indicator for each dimension is first calculated by means of the Distance-Principal Component Indicator (DPC) and another indicator is computed using the Goal Programming Synthetic Index (GPSI). In the second stage, DEA is used in order to generate a global competitiveness index.

Generally, the use of various procedures can cause dissimilar results and therefore diverse orders when applied to the same pool of information. On several occasions, it is therefore necessary to seek a method to merge these results and reveal a general ranking. In this respect, the Borda Count seems to be one of the finest methods available. This method was first taken from the social theory of voting and remains appropriate in order to integrate various rankings (Wu, 2011). In data fusion, it is a way to amalgamate two or more ranked lists into a single list (Nuray & Can, 2006). Borda Count is a simple summing of expressed voter preferences to achieve a social ranking and can be used as a way to order alternatives according to their aggregate ranking (Lamboray, 2007). It was first proposed by Jean-Charles de Borda (Borda, 1784) as a voting method and represents an important step in the development of modern electoral systems (Reilly, 2002).

In contrast to previous studies in the field of tourism, (e.g., Pérez, V. et al., 2013), this research includes the achievement of a competitiveness ranking using three different methods and the study of their differences according to the weights and aggregation methods. Additionally, a meta-index is obtained by means of the Borda Count method by allowing decision-makers to achieve a global ranking representative of the overall competitiveness degree for compared destinations. This is an innovative approach in the achievement of meta-indices, since it enables the strengths of the composite indicators to be taken into account while striving to reduce their

weaknesses. This constitutes a new field of research in the measurement of competitiveness. The study includes the comparison of the rankings obtained with the rankings from the WEF, both for each sub-index and globally. This comparison validates the feasibility of the proposed approaches in the creation of a ranking similar to that published by the WEF.

The second study involves the calculation of a tourism competitiveness index that includes other destinations from the region, which are currently outside the TTCI. Sixteen more destinations are considered, from which it was possible to obtain the necessary information. The data employed involves 27 indicators, which are representative of the topics in the TTCI. The method proposed for the merging of the information was the Data Envelopment Analysis after Goal Programming index (DEAGP), due not only to its capacity to include all the indicators and, therefore, all the information, but also to the similarity of its results to those from the TTCI and their close relationship to the other global rankings, and due to the additional indicators. This is one of the largest studies of tourism destination competitiveness carried out on the region, since it comprises 33 destinations and 27 indicators.

2.2 Aggregation procedures

2.2.1 The DP$_2$-Distance indicator

This index was created by the modification of Ivanovic distance, by adding the determinant coefficient to the weighting system (Pena, 1978). In effect, the DP$_2$-Distance for a destination is defined as:

$$DP_2 = \sum_{i=1}^{n} \frac{d_i}{\sigma_i}(1 - R^2_{i.i-1,i-2,\ldots,1}) \text{ with } R_1^2 = 0$$

For $i = 1, \ldots, n$, d_i is the distance between the observed unit and the reference situation for the i*th* indicator and σ_i is the standard deviation of the i*th* indicator. The d_i dividing the standard deviation of each indicator eliminates the problems associated with the measurement units. $R^2_{i,i-1\ldots1}$ is the determination coefficient, and the term $1 - R^2_{i,i-1\ldots1}$ is the correction factor that represents the variability percentage of the i*th* indicator that is not lineally explained for the previous *i*-1 indicators. In this way, the problem of information duplicity is solved because this coefficient eliminates the information contained in the i*th* indicator contributed in the *i*-1 indicators previously added.

Weights represent the amount of new information added for each indicator included in the calculation process. Therefore, this index weights the differences between the indicators and

their reference values for the percentage of new information that each indicator added to the global measure provides.

The DP_2 value varies when the order of the initial indicators is modified in the calculation due to the determination coefficient. In this respect, it is necessary to establish a hierarchy process to guarantee an order for the initial indicators. Hence, the iterative procedure that begins from Freshet's distance (Pena, 1978) is executed, based on the rule that the amount of information that each indicator contributes will be bigger while the correlation between the indicator and the DP_2 composite measure is larger. The entry order of each initial indicator to the global measure is conditioned by the amount of information contained therein. In this way, the first added indicator will be that with the most information regarding the phenomenon analysed.

This procedure contains certain advantages such as its calculus objectivity, its independence from normalization processes, and that its weights are determined endogenously in such a way that it eliminates the duplicity of information since each indicator is weighted by the amount of information that is not included in the previously added indicator. It has no implication with the end user and is easy to understand since it is a simple measure based on the distance to a reference point. As a negative aspect, it should be pointed out that the value of the synthetic indicator is affected by the order of entry of the initial indicators. In this respect, another aggregation process is proposed to seek dissimilarities in the results.

In order to determine the global DP_2-Distance indicator, the first step involves obtaining the dimensional indicators, and taking the maximum score for each indicator as the reference value. For the construction of a global index, a representative group of initial indicators is selected for each dimension. Initial indicators that show a correlation level greater than 0.5 with the dimensional measures are selected. Weights are represented by the variability percentage of the i*th* indicator, which is not lineally explained by the previous *i*-1 indicators. This constitutes the amount of new information added for each indicator included in the calculus process.

2.2.2 Composite Indicator using Data Envelopment Analysis

2.2.1.1 First Step: Distance-Principal Component Indicator (DPC)

This indicator combines PCA with the concept of distance to a reference point based on multicriteria decision-making philosophy and is defined as follows:

$$DPC_i = \sum_{j=1}^{q}\left[VE_j \left(\sum_{k=1}^{p} IN_{ik} \left| Corr_{jk} \right| \right) \right]$$

for $i = 1, 2, \ldots, n$, where n is the number of observations, p is the number of original indicators, q is the number of components selected, VE_j is the variance explained by the jth component, and $Corr_{jk}$ is the correlation between the jth component and the kth indicator. IN_{ik} is the normalized value of the ith observation in the kth indicator, which is needed for the normalization of the data such that the measuring units used for each indicator exert no effect on the final result. This procedure involves dividing the distance to the anti-ideal point by the difference between the maximum and the minimum value:

$$IN_{ik} = \frac{I_{ik} - Min}{Max - Min}$$

where I_{ik} is the value of the ith observation in the kth indicator. We have taken the minimum value of each indicator as the reference point, while bearing in mind that higher values indicate that the destination is assumed to be more competitive. Thus, when measuring the distance to the minimum value, we obtain the distance to an anti-ideal point; when this distance is larger, the competitiveness of the destination is greater. For the calculation process, the reference value is the minimum of each indicator, under the assumption that higher scores indicate which destinations are more competitive. This approach enjoys certain advantages such as the ease in interpreting the final result since the values of the initial indicators are defined according to their distance to a fixed reference value such that the synthetic indicator is a linear combination of these distances and not of the principal components. This process is less subjective than other methods because the end-user's task consists only in choosing the initial indicators and the criteria for the selection of the components.

Weights are determined endogenously by taking into account data variability, expressed as the product of the variance explained by each chosen principal component and the absolute value of the correlation of each indicator with the chosen principal component. This represents the quantity of information explained by the components and the contribution of each initial indicator to this variance.

2.2.1.2 First Step: Goal Programming Synthetic Index (GPSI)

The GPSI is encouraged in the procedure of Blancas et al. (2010a), and supported in previous studies (Díaz-Balteiro & Romero, 2004). It has been previously employed to create composite indicators in sustainability studies (Pérez, V. et al., 2013; Pérez, V. et al., 2016), thanks to its capacity to embrace all the information available and the easy in interpreting the results, among other advantages. Considering a set of m initial indicators (I_j with j=1, 2,…, m), for n units (U_i,with i= 1, 2,…, n) where X_{ij} represents the value of the ith unit valued in the jth indicator

with $1 \leq i \leq n$ and$1 \leq j \leq m$. Firstly, it is necessary to differentiate between positive (I_{ij}^{+}) and negative (I_{ik}^{-}) indicators, depending on the improvement direction of "more is better" or "less is better", respectively. In this way, X_{ij}^{+} represents the value for the *i*th unit in the *j*th positive indicator, with $j \in J$, (*J*, positive indicators) and X_{ik}^{-} is the value of the *i*th unit in the *k*th negative indicator, with k ∈ *K*, (*K*, negative indicators). The achievement levels or the target for each indicator can therefore be determined: $u_j^{+}$for the positive and u_k^{-} for the negative. Subsequently, goals are created by introducing the deviation variables to measure the difference between the indicator value and the target:

For positive indicators: $I_{ij}^{+} + n_{ij}^{+} - p_{ij}^{+} = u_j^{+}$ with $n_{ij}^{+}, p_{ij}^{+} \geq 0, n_{ij}^{+} \cdot p_{ij}^{+} = 0$

For negative indicators: $I_{ik}^{-} + n_{ik}^{-} - p_{ik}^{-} = u_k^{-}$ with $n_{ik}^{-}, p_{ik}^{-} \geq 0,\ n_{ik}^{-} \cdot p_{ik}^{-} = 0$

where n_{ij}^{+} is the undesirable variable for positive indicators and p_{ik}^{-} is the undesirable variable for the negative indicators. Higher values than these variables reveal an absence of competitiveness. This procedure enables several indices to be obtained and the Net Goal Programming Synthetic Index GPSI^{N} is selected for its compensatory character between the strengths and weaknesses for each unit under evaluation. This composite indicator evaluates the relative situation of each unit without demanding that all the aspiration levels be chieved in order to determine the degree of competitiveness for a destination versus its competitors. The GPSI^{N} for a unit is defined as:

$$GPSI_i^N = \sum_{j \in J} \frac{w_j^{+}\left(p_{ij}^{+} - n_{ij}^{+}\right)}{u_j^{+}} + \sum_{k \in K} \frac{w_k^{-}\left(n_{ik}^{-} - p_{ik}^{-}\right)}{u_k^{-}}, \forall i \in \{1, 2, \ldots, n\}$$

where $w_j^{+}$and w_k^{-} are the weights for positive and negative indicators respectively. The first sum shows the difference between the strengths and weaknesses for positive indicators and similarly, the second sum shows this for the negative indicators.

The GPSI methodology enjoys several advantages over other methods. First, it requires no previous normalization method. Second, it can be applied when the number of indicators is greater than the number of units of the initial system, unlike other statistical methods, thereby making it useful in practice. Third, the index is created using the information contained in all the indicators selected and thus there is no loss of information. Its application in the context of the present research is due to its ability to identify the strengths and weaknesses of each destination whole considering the topics representative of destination competitiveness.

Furthermore, this method enables quantitative aspects and perceptions to be included in the composite indicator through the determination of the weights, the establishment of the target values, and the goals. Those aspects represent the stakeholder's desires concerning competitiveness and the degree to which each destination achieves this goal. The contribution of this proposal in measuring destination competitiveness involves the possibility of establishing a lower bound for the indicators in such a way that a destination could be considered competitive with respect to this target value in comparison with its competitors. Moreover, there is the facility of interpreting the results through the identification of the strengths and weaknesses of the destinations under comparison in a more comprehensible way than the TTCI. Once the dimensional indicators, are obtained, the second stage involves the use of DEA to generate a global index, as described.

2.2.1.3 Second Step: DEAPC and DEAGP global indicators

DEA is a non-parametric technique developed for the measurement of efficiency in production. It is useful in identifying the best performer as well as in providing actionable measures for the improvement of performance (Wu, 2011). This method has been used for composite indicators (Blancas et al., 2013; Pérez, V. et al., 2016; Rogge, 2018; Verbunt & Rogge, 2018), also in destination competitiveness studies (Assaf, 2012; Gómez-Vega & Picazo-Tadeo, 2019). The principle of DEA is to let the data speak for itself rather than to force some rigid, arbitrarily specified functional form to be assumed. This principle is firmly rooted in the economic literature on activity analysis and non-parametric production analysis (Kuosmanen et al., 2006).

As in González et al. (2018), the basic idea is to find the weights that maximize the composite indicator for the unit under analysis. Best performance is not a theoretical or abstract concept; it is defined by merely observing the best performer. Second, DEA models possess the immense advantage of displaying unit invariance, which renders the normalization stage redundant. Finally, by allowing every unit to choose its individual weights, DEA respects the individual characteristics of the units and their own particular value systems. DEA enables competitiveness to be gauged in terms of production efficiency (Gómez-Vega & Picazo-Tadeo, 2019) and thus, misspecification problems are prevented since no assumption regarding the functional form of the production function is required (Mante, 2001; Burney et al., 2013) and, therefore, the consideration of multiple outputs is also possible. These features permit multiple items of data to be included which represent the particularities of the competitiveness process.

For this stage, the initial information was previously obtained from the dimensional indicators for each destination. These are positive and can be employed as outputs to obtain the global synthetic index. A single dummy input with value unity for each destination can be used; the global index value is the virtual output. This model is formally equivalent to the original input-oriented, constant-returns-to-scale DEA model presented (Charnes et al., 1978). In this way, the global synthetic index for the i_0 observation is obtained by solving the following Linear Programming problem:

$$DEA_{i_0} = Max_w \sum_{j=1}^{d} w_j^{i_0} DI_{i_0 j}$$

subject to:

$$\sum_{j=1}^{d} w_j^{i_0} DI_{ij} \leq 1 \ \ \forall i = 1, \dots, n \text{ (normalization constraint)}$$

$$w_j^{i_0} DI_{ij} \geq \omega \ \forall i = 1, \dots, n, \forall j = 1, \dots, d \text{ (virtual output constraint)}$$

$$w_j^{i_0} \geq 0 \ \forall j = 1, \dots, d \text{ (non} - \text{negativity constraint)}$$

where $w_j^{i_0}$ are the weights for the observation i_0, *DI* represents the *j*th dimension indicator for the *i*th observation, which would be the DPC if the global index refers to Data Envelopment Analysis after distance-Principal Component (DEAPC) (Pérez, V. et al., 2013) or the GPSI is used if the global measurement represents Data Envelopment Analysis after Goal Programming (DEAGP) (Pérez, V. et al., 2014); *d* is the number of dimensions considered (the sub-indices held in the TTCI index), and ω is a real number that represents the minimum value allowed for the *j*th virtual output for the *i*th observation. The virtual output constraint involves the implication of all the dimensions in the global composite index.

The objective function chooses the weights that maximize the value of the composite index for observation i_0. In the best situation, the global synthetic index takes a value of 1, which implies that the destination has a performance equal to its reference unit. The 0 value represents the worst situation. Thus, the composite indicator takes the form $0 \leq DEA_{i_0} \leq 1$ for each destination, where higher values represent better overall relative competitiveness. The [0,1] range is a characteristic of the input-oriented model, which numerically renders results more comprehensible and guarantees the results with a higher explanatory power: this is a desirable characteristic of composite indicators.

This procedure, in general terms, has the advantage of obtaining a composite indicator value sensitive to the stakeholder's needs; more weight is given to those indicators for which certain destinations are in a better position compared to others included in the study. In this way, the strengths and weaknesses of destinations can be evaluated. Weights are calculated such that the maximum possible value is determined for the composite indicator in each destination. This indicates the flexibility of the procedure, since the same level of importance does not need to be given to each indicator by different destinations. In addition, the use of DEA in the second stage indicates how each dimension contributes to the overall value of the global index.

The optimization process can lead to many zero weights if no restrictions on the weights are imposed, and hence setting restrictions on weights is necessary for this method to be of practical use (Vidoli & Mazziotta, 2011). Introducing weight restrictions can balance the need for weight flexibility (data-driven benevolence) with a reasonable degree of consistency (González et al., 2018). To this end, the virtual output constraint has been introduced. This guarantees the presence of all dimensions in the composite index with a minimum value of ω. This involves assigning values higher than zero to all weights.

As can be observed, the three previously explained procedures present differences, such as the variability of the results due to the order of entry of the initial indicators in the calculation process, the introduction of subjective judgements, which permits us to take into consideration the necessities of the stakeholders, and the method employed to calculate the weights that represent the importance for each indicator analysed. Any of these aspects can cause differences in the results obtained from the application of either procedure. Generally, different methods can cause dissimilar results and therefore diverse orders when they are applied to the same items of information. It is therefore necessary on several occasions to seek a method that merges these results and finds a general ranking. To this end, we propose the Borda Count.

2.2.3 Borda Count

The Borda Count method uses mapping from a set of individual rankings to create a combined ranking that leads to the most relevant decision (Lumini & Nanni, 2006). In Borda Count, a voter ranks all candidates in a strict order by assigning different points according to the rank order (Vainikainen et al., 2008). This method assigns zero points to a voter's least preferred option, 1 point for the next option, and $(n - 1)$ points for the most preferred (where n is the number of alternatives). However, the way of assigning zero points to the least preferred candidate is unfavourable for the implementation of the analytical calculation (Lawrence et al.,

2012). The Borda ranking is then determined by ordering the Borda scores. This ranking has been used in numerous applications, including: as a data fusion technique for combining ranked lists (Wu, 2011; Ortega et al., 2013); in the selection of an icon dish for a local restaurant to promote food (Lawrence et al., 2012); and as a voting technique applied in forest decision-making problems (Lakicevic et al., 2014), among others.

2.3 Study

The study is developed in the region as described in Chapter one. This time, only 17 destinations are compared, 5 of which are Island States (Barbados, Dominican Republic, Haiti, Puerto Rico, and Trinidad and Tobago) and 12 Continental States. Nine of these states are included in 8 editions of the TTCI, while Barbados appears in 7, El Salvador, Honduras and Jamaica in 6, Puerto Rico appears in 5, Guyana and Suriname in 4, and Haiti appears only twice. As pointed out previously, the information used in the study corresponds to the 2015 edition of the TTCI. It comprises 90 indicators distributed into 14 pillars grouped in 4 sub-indices (WEF, 2015). Mexico is the first destination that appears in the ranking, in 30th position, followed by Panama, Costa Rica, and Barbados, in the 34th, 42nd, and 46th positions, respectively. The last destination is Haiti in the 133rd position of 140 destinations worldwide.

Table 3. Sub-indices and pillars of the Travel and Tourism Competitiveness Index

Sub-index A: Enabling Environment
Pillar 1. Business Environment (12 indicators)
Pillar 2. Safety and Security (5 indicators)
Pillar 3. Health and Hygiene (6 indicators)
Pillar 4. Human Resources and Labour Market (9 indicators)
Pillar 5. ICT Readiness (8 indicators)
Sub-index B: T&T Policy and Enabling Conditions
Pillar 6. Prioritization of Travel and Tourism (6 indicators)
Pillar 7. International Openness (3 indicators)
Pillar 8. Price Competitiveness (4 indicators)
Pillar 9. Environmental Sustainability (10 indicators)
Sub-index C: Infrastructure
Pillar 10. Air Transport Infrastructure (6 indicators)
Pillar 11. Ground and Port Infrastructure (7 indicators)
Pillar 12. Tourist Service Infrastructure (4 indicators)
Sub-index D: Natural and Cultural Resources
Pillar 13. Natural Resources (5 indicators)
Pillar 14. Cultural Resources and Business Travel (5 indicators)

Source: WEF (2015).

2.3.1 Dataset

The study uses the data of the WEF with 90 indicators and incorporates both hard and soft data. In order to prevent problems related to the absence of information, those indicators with more

than 3 missing values are excluded. As a result, the indicators C11.02 "Quality of railroad infrastructure" and C11.05 "Railroad density" are omitted since they have 12 and 13 missing values, respectively. Both indicators correspond to the Sub-index C "Infrastructure", Pillars 10 and 11.

For those indicators with 3 or fewer missing values, their scores are substituted with the Minimum. This substitution guarantees the presence of those indicators in the composite measure and, therefore, its representativeness. Moreover, the scores are not influenced thanks to the proposed method. Substitution is carried out in 10 indicators as follows: an observation for indicator A5.07 corresponding to the Sub-index A, Pillar 5; also, in B7.02 (1 substitution), B7.03 (1), B8.02 (3), B9.05 (1), B9.06 (1), B9.08 (2), and B9.09 (1); while substitutions in Sub-index C are required in C10.04 (3) and C12.04 (1).

Additionally, following the procedure of the WEF (2015), indicators C10.02 "Available seat kilometres, domestic" and C10.03 "Available seat kilometres, international" are added together to form a single indicator. Moreover, the simple average aggregation measure is the value for the combination of indicators C11.06 "Road density" and C11.07 "Paved road density". Consequently, the data set comprises 86 indicators (Table 4), of which 30 are subjective. The values used are the same as those proposed by the WEF in order to analyse the proximity between its results and the results of the proposed measurements.

Table 4. Final number of indicators

Sub-index A		Sub-index B		Sub-index C		Sub-index D	
Pillar	Indicators	Pillar	Indicators	Pillar	Indicators	Pillar	Indicators
01	12	06	6	10	5	13	5
02	5	07	3	11	5	14	5
03	6	08	4	12	4	-	-
04	9	09	9	-	-	-	-
05	8	-	-	-	-	-	-
	40		**22**		**14**		**10**

Source: Author's own.

2.4 Results and discussion

The calculation process is developed in the same way as that proposed by the WEF. First, a composite indicator is obtained for each pillar. Second, the pillars are aggregated to obtain the sub-indices. Finally, the global index is calculated starting from the dimensional indicators. Despite the unfeasibility of the DPC and DP_2 indicators embracing more indicators than destinations, the proposed steps allow the inclusion of all the information. Moreover, in order to attain a calculation process as close as possible to the WEF proposal, the aspiration level

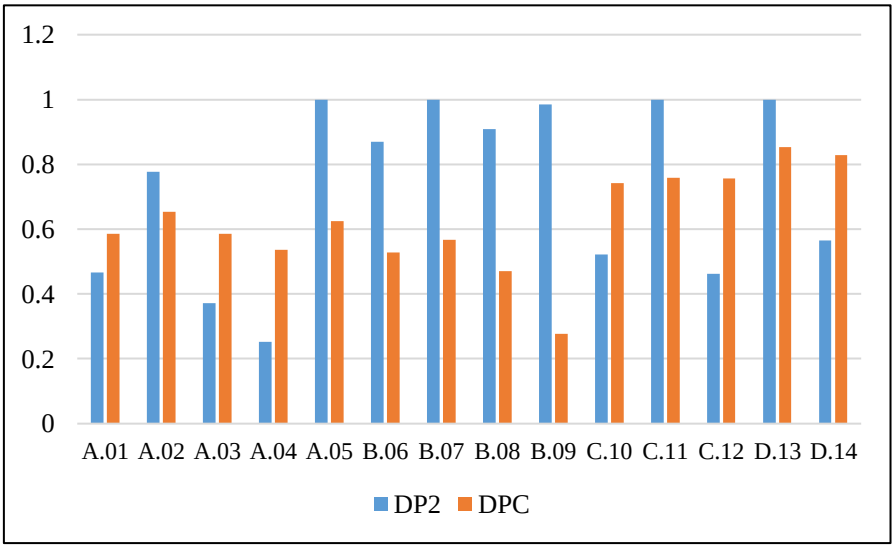
used for the GPSI is zero. In this regard, all the destinations only evaluate their strengths. The denominators are omitted from the GPSI index, and, therefore, the weaknesses are not included. This is due to the use of the normalized values proposed by the WEF as initial information.

As pointed out earlier, differences between the procedures may lead to alterations in the rankings, caused by the weighting and aggregation processes. In this respect, weights are achieved in a different way for each methodology. This is the reason for the existence of dissimilarities between the importance of the dimensions for the indices. The DP_2 and the DPC methods calculate their weights endogenously, while for the GPSI, weights should be assigned. For the latter procedure (GPSI), the same importance is given to all the indicators contained in each pillar. For sub-dimensional indicators, the same importance is given to each pillar within the sub-indices. Finally, all sub-indices receive the same importance in order to calculate the global indicator.

As pointed out before, differences among the procedures may lead to alterations in the rankings, caused by the weighting and aggregation processes. In this sense, weights are achieved in a different way for each methodology. That is the reason for the existence of dissimilarities among the importance of the dimensions for the indexes. The DP_2 and the DPC methods calculates their weights endogenously, while, for the GPSI weights were assigned consequently to the WEF proposal. The same weight was assigned to each indicator comprised in each pillar. Moreover, this was the same procedure used for the subindexes.

Figure 8 demonstrates the weights obtained for each pillar of the DP_2 and DPC methods. The analysis is not based on the values of the weights compared between the methods, but instead on the order of their assignation within each dimension since their values are calculated differently and, therefore, no normalization method can be applied to guarantee their paired comparison. In the Sub-index A “Enabling Environment”, the least important pillar in both methods is A.04. The distribution of the weights made by the DP_2 is, in decreasing order of importance: A.05, A.02, A.01, and A.03. For the DPC, the assignation is A.02, A.05, A.03, and A.01. For Sub-index B “T&T Policy and Enabling Conditions”, the highest importance for both methods is given to Pillar B.07, and B.08 is also considered as the third most important pillar. However, B.09 is the second most important according the DP_2 and the fourth is B.06. These two pillars are inversely weighted by the DPC. In Sub-index C “Infrastructure”, both methods assigned the highest weight to Pillar C.11, while C.10 was second for the DP_2 and third according to the DPC. Finally, Pillars D.13 and D.14 were first and second according to the weights for both procedures in Sub-index D “Natural and Cultural Resources”.

Figure 8. Weights for Pillars



Source: Author's own.

2.4.1 Results for the dimensional indicators

The dimensional results are presented in Tables 5, 8, 11, and 14, where the rankings for each methodology appear. The dimensional results of the TTCI are also presented in order to enrich the comparison.

2.4.1.1 Sub-index A "Enabling Environment"

The first sub-index, "Enabling Environment", comprises six pillars and 40 indicators. The five most competitive destinations (first quartile) coincide for all the rankings: Barbados, Costa Rica, Panama, Puerto Rico, and Trinidad and Tobago. Only Trinidad and Tobago leave this group in the DPC ranking, where their situation worsens and occupies the sixth place, and Suriname therefore enters the fifth position (Table 5). Barbados occupies the first position in all the rankings attained. It presents the best scores in 2 of the 5 pillars included in this sub-index: A.02 "Safety and Security" and A.05 "ICT Readiness", and remains within the more competitive destinations in the other pillars. Its worst position is that of fifth in Pillar A.01 "Business Environment", which is dominated by Panama. Puerto Rico and Costa Rica hold first position in sub-index A.03 "Health and Hygiene" and A.04 "Human Resources and Labour Market", respectively.

Their general best behaviour is located in the first and fifth pillars, whereby they attain the best positions among all the destinations. These two pillars represent the extent to which a country has established a conducive policy environment for companies to do business that influences all sectors, including travel and tourism and the improvement in modern infrastructure (mobile network coverage and quality of electricity supply), and the capacity of businesses and

individuals to use and provide online services (WEF, 2015). The worst score of these countries was achieved by Trinidad and Tobago in Pillars A.02, A.03 and A.04, and by Panama in A.04.

Table 5. Rankings for Sub-index A: "Enabling Environment"

Destinations	TTCI_A		DP_2_A		DPC_A		GPSI_A	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Barbados	5.25	1	10.256	1	3.365	1	5.246	1
Colombia	4.08	13	5.588	11	1.919	14	4.152	13
Costa Rica	4.84	2	9.197	2	3.272	2	4.921	2
Dominican Republic	4.21	9	5.514	12	2.221	10	4.264	9
El Salvador	4.13	11	5.672	10	1.999	13	4.174	12
Guatemala	4.14	10	5.986	8	2.085	12	4.209	11
Guyana	4.11	12	4.734	14	2.276	8	4.22	10
Haiti	3.42	17	1.319	17	1.569	16	3.42	17
Honduras	3.92	15	4.688	15	1.851	15	3.998	15
Jamaica	4.26	8	5.924	9	2.092	11	4.339	8
Mexico	4.34	7	6.117	7	2.249	9	4.392	7
Nicaragua	4.06	14	5.275	13	2.328	7	4.085	14
Panama	4.7	4	8.239	4	2.893	4	4.766	4
Puerto Rico	4.73	3	8.459	3	2.951	3	4.794	3
Suriname	4.42	6	6.356	6	2.577	5	4.411	6
Trinidad and Tobago	4.53	5	7.062	5	2.358	6	4.584	5
Venezuela	3.58	16	3.088	16	1.252	17	3.643	16

Source: Author's own.

The five least competitive destinations in this sub-index are Colombia, Haiti, Honduras, Nicaragua, and Venezuela. Their generally bad scores are located in Pillars A.01, A.04, and A.05. In this last pillar, Colombia attains the sixth position. However, its low scores in A.01 and the worst in A.02 "Safety and Security", cause its general decline in this sub-index, despite being located in the 7th and 6th places in Pillars A.03 and A.04. The lowest values in two of the five pillars of this sub-index are achieved by Venezuela (A.01 and A.04) and Haiti (A.03 and A.05). The best position for Venezuela (5th) is reached in Pillar A.03. Haiti obtained its best score with the 7th position in A.02, where Nicaragua attained a score valid to be included in the first quartile (4th place). This is the best position obtained for one of the destinations located in the last quartile regarding competitiveness.

In spite of the differences between procedures and weight assignation, there is major similarity amongst rankings from the statistical point of view. The Pearson Correlation between scores demonstrates this similarity (Table 6) with all values higher than 0.9 and significant at the 0.01 level. The lowest value is registered for the relation between the DPC and DP_2 scores, while

the most similar to the TTCI is the GPSI. Furthermore, among the proposed procedures, the most similar were the scores obtained by the GPSI and the DP_2.

Table 6. Pearson Correlations (Scores)

	TTCI_A	DP_2_A	DPC_A	GPSI_A
TTCI_A	1			
DP_2_A	0.984**	1		
DPC_A	0.947**	0.923**	1	
GPSI_A	0.977**	0.987**	0.941**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

The information in Table 5 also denotes great stability amongst the rankings. In comparison with the TTCI ranking, the most stable is that attained by the GPSI results, whereby 14 destinations remain in the same position, while El Salvador and Guatemala worsen by one position and Guyana registered an improvement of two positions (from 12th to 10th), thanks to a good score in "Human Resources and Labour market" (A.04). Moreover, the DP_2 and the DPC maintain 10 and 5 destinations in the same positions as the TTCI, respectively. The maximum variations recorded are for the Dominican Republic (worsening by 3 units with the DP_2 due to Pillars A.04 and A.05) and for Nicaragua in the DPC (improvement of 7 units thanks to A.02).

Table 7. Spearman's rho Correlations (Positions)

	TTCI_A	DP_2_A	DPC_A	GPSI_A
TTCI_A	1			
DP_2_A	0.971**	1		
DPC_A	0.887**	0.850**	1	
GPSI_A	0.993**	0.946**	0.909**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

The closeness of the rankings can also be observed through the Spearman's rho Correlation Coefficient (Table 7, above). All the correlation coefficients are higher than 0.850 and significant at the 0.01 level. The closest to the TTCI is the GPSI ranking. The greatest differences are found between the DPC and the DP_2, although they do remain significant. Moreover, the ranking created with the GPSI is the most similar to the remaining rankings than the order proposed by the TTCI. Additionally, Barbados, Honduras, Panama, and Puerto Rico remain in the same position for all the rankings, while all the other destinations varied at least once. El Salvador, Guatemala, and Guyana do not maintain the same position in any order.

2.4.1.2 Sub-index B "Travel and Tourism Policy and Enabling Conditions"

In this sub-index, the Pillars B.06 "Prioritization of Travel & Tourism", B.07 "International Openness", B.08 "Price competitiveness", and B.09 "Environmental sustainability" are analysed. It comprises 23 indicators. Costa Rica, El Salvador, Honduras, Nicaragua, and Panama appear within the first five destinations in all the sub-indices (Table 8). These countries present no homogeneous extreme behaviour and are therefore valid to be catalogued as the most competitive in a joint way in most of the pillars, except for Pillar B.07 with the DP_2 index and, in close proximity, with the DPC. Their success is largely due to their values being higher than the median and the mean for indicators B7.02 "Openness of bilateral Air Service Agreements", and B7.03 "Number of regional trade agreements in force" for all these destinations.

Moreover, their strengths are also located in Pillar B.08 "Price Competitiveness" due to scores with the same behaviour in indicators B8.02 "Hotel price index" and B 8.03 "Purchasing power parity", with the exception of Costa Rica in the latter indicator, with a value close to the worst for the sample. Nevertheless, all these more competitive destinations reached values above the score of the first quartile in the same indicator. However, their great competitiveness in this sub-index is caused by good scores in particular indicators.

Panama is the most competitive in this subindex. It reaches the first position in all rankings. However, this destination does not attain the highest score in any pillar within the sub-indices in the three methods. Notwithstanding, Panama has scores higher than the mean and the median in all pillars. Its best position is the second in Pillars B.06 and B.09, according to the DP_2 method. The good score in Pillar B.06 "Prioritization of Travel & Tourism" is thanks to a good record in indicators B6.01 "Government prioritization of travel and tourism industry", B6.03 "Effectiveness of marketing and branding to attract tourists" (second among all competitors), B6.05 "Timeliness of providing monthly/quarterly T&T data", and B6.06 "Country brand strategy rating". The most concerning value in this pillar corresponds to indicator B6.04 "Comprehensiveness of annual T&T data", but maintains its value above the mean of the sample.

Considering Pillar B.09, the good value of Panama relies on its position within the most competitive destinations in 50% of the indicators comprised therein. The best position is that of first in B9.05 "Environmental treaty ratification", and the most concerning topics are B9.08 "Forest cover change" and B9.10 "Costal shelf fishing pressure" in the 14^{th} and 12^{th} positions,

respectively. In the remaining three indicators, Panama is located in the second quartile, but with values above the mean and the median.

Table 8. Rankings for Sub-index B: "T&T Policy and Enabling Conditions"

Destinations	TTCI_B		DP_2_B		DPC_B		GPSI_B	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Barbados	4.24	8	6.378	14	1.086	13	3.974	13
Colombia	4.24	9	7.795	8	1.517	8	4.269	8
Costa Rica	4.47	3	9.735	3	1.722	5	4.514	3
Dominican Republic	4.07	12	6.876	12	1.380	10	4.131	10
El Salvador	4.4	4	8.758	5	1.768	3	4.440	5
Guatemala	4.32	6	8.55	6	1.713	6	4.376	6
Guyana	4.3	7	7.103	10	1.186	12	3.986	12
Haiti	3.98	14	4.341	15	1.046	15	3.695	15
Honduras	4.5	2	10.039	2	1.820	2	4.548	2
Jamaica	4.23	10	7.964	7	1.437	9	4.254	9
Mexico	4.22	11	7.3	9	1.519	7	4.343	7
Nicaragua	4.36	5	8.812	4	1.757	4	4.461	4
Panama	4.69	1	10.956	1	1.854	1	4.729	1
Puerto Rico	4.06	13	6.556	13	1.070	14	3.749	14
Suriname	3.67	16	3.785	16	0.842	16	3.456	17
Trinidad and Tobago	3.96	15	7.025	11	1.338	11	4.021	11
Venezuela	3.4	17	2.99	17	0.756	17	3.479	16

Source: Author's own.

Taking into account the DPC values, Panama is still in first position, with a behaviour close to that described with the DP_2 approach, plus the fifth position also in Pillar B.07, due to the highest score in the indicator B7.03 "Number of regional trade agreements in force". Its difference to the DP_2 index is caused by the weighting process. This pillar is the most valued for both methods; however, its weight for DP_2 is double that of the weight given by the DPC procedure. On the other hand, the results of the GPSI index reveals that Panama does not hold the highest value in any pillar; however, it is, globally, the most competitive. The Dominican Republic, El Salvador, Guatemala, and Suriname are those countries that are more competitive in Pillars B.06, B.07, B.08, and B.09 respectively. However, only El Salvador is considered among the most competitive in Sub-index B "T&T Policy and Enabling Conditions".

Honduras, second in the ranking of the WEF, remains in this position with all the proposed procedures. This destination presents values higher than those of 75% of the destinations analysed in Pillars B.07, B.08, and B.09 for the DP_2 and the DPC methods. It stands among the top five destinations in indicators B7.02 "Openness of bilateral Air Service Agreements", B8.02 "Hotel price index", and B8.03 "Purchasing power parity", respectively, and is among the most

competitive in five indicators from Pillar B.09 “Environmental Sustainability”, where its main strength is in indicator B9.06 “Baseline water stress”. This is the only indicator in which this destination has the highest score. The difference with respect to Panama is caused by its presence in the third quartile in 9 of the 23 indicators of this subindex.

Costa Rica occupies the third position in all the rankings, except for the DPC (5th), and still stands among the most competitive destinations. It is the most competitive in the Environmental Sustainability Pillar (B.09), and comes first for the DP_2 and DPC methods and third according to the GPSI approach. Moreover, this destination also has good scores in Pillar B.06 for DP_2 and GPSI, and Pillar B.07 for this last method. Its main concern lies in Pillar B.08, positioned in the third quartile for the DP_2 and the DPC, and located in the second quartile for the GPSI results.

It has the first position in indicator B9.01 “Stringency of environmental regulations”, and is the second in two more indicators from this Pillar: B9.02 “Enforcement of environmental regulations”, and B9.05 “Environmental treaty ratification”. Moreover, it is the second most valued in the “Effectiveness of marketing and branding to attract tourists” (B6.03). Its main weaknesses in this sub-index are found in the “Number of regional trade agreements in force” (B7.01), “Purchasing power parity” (B 7.04), and “Fuel price levels” (B7.05).

Nicaragua is the fourth most competitive for all the rankings, which differs from the fifth position granted by the TTCI. Its main strengths are embraced in Pillar B.08 for the DP_2 (3rd) and the DPC (2nd), and 5th and 3rd places are attained in Pillar B.08 for these procedures, respectively. Considering the GPSI results, its best position is fifth for Pillar B.07. In contrast to the previous methods, in the GPSI, the score reached in Pillar B.08 positioned this destination in 15th place and 14th for the score from Pillar B.06.

Its best position in Pillar B.06 corresponds to second place in the “Comprehensiveness of annual T&T data” (B6.04). This is the only indicator in which it is located in the first quartile within this pillar. Moreover, it is affected by the worst score in “Country brand strategy rating” (B6.06) and is given 14th position according to the “T&T government expenditure” (B6.02). It also has a great mark in B7.02 “Openness of bilateral Air Service Agreements”, valid to compensate its bad behaviour in B7.01 “Visa requirements” in comparison with its competitors. Its general main advantages are located in Pillar B.08, specifically thanks to its 1st and 3rd places in “Purchasing power parity” (B8.03) and “Hotel price index” (B8.02). At the same time, it appears once among the top five destinations for a single indicator from Pillar B.09. This is

given by the 5th position regarding "Baseline water stress". In most of the indicators from these pillars (6 out of 9), Nicaragua is located in the third quartile.

El Salvador obtained the most competitive position in the ranking corresponding to the DP_2 and the DPC, mainly due to its good scores in Pillar B.07. This pillar was the most highly valued for both methods and it is also where this destination attained its best position according to the GPSI (5th). The scores for Pillars B.06 and B.08 placed this destination in the second quartile. Moreover, its main concerns are in Pillar B.09. The low scores reached positioned it in the fourth quartile for the DPC and the GPSI methodologies. The difference between the DP_2 and the DPC rankings for El Salvador arises because Pillar B.09 is the second most important pillar for the DP_2 and is the least important for the DPC (the 4th). This is why it reached a better position in the DPC. Less weight was given to the pillar with the smaller value.

El Salvador is only included in the first quartile in the indicator "Comprehensiveness of annual T&T data" (B6.04) from Pillar B.06 and its lower score was attained in B6.01 "T&T government expenditure" (14th). In the remaining indicators from this pillar, El Salvador appears in the second quartile, except for the third quartile due to the value in "Government prioritization of travel and tourism industry" (B.601), consequently with the previous explanation. Its best behaviour is located in Pillar B.07, with the first position regarding "Openness of bilateral Air Service Agreements" (B7.02) and the fourth according to the "Number of regional trade agreements in force" (B7.03). El Salvador stands out due to reaching the second best score in "Hotel price index" (B8.02) and fourth position in B8.03 "Purchasing power parity", but fails due to high "ticket taxes and airport charges" (B8.01) and "fuel price levels" (B8.04) compared to its competitors in Pillar B.08. For Pillar B.09, its single strength is the 5th position in "Threatened species" (B9.07) and the smaller value corresponds to the 16th position for "Particulate matter (2.5) concentration" (B9.04).

The worst destinations of this sub-index are found for Barbados, Haiti, Puerto Rico, Suriname, and Venezuela. The general bad behaviour that they have in common corresponds, principally, to the lowest scores in Pillar B.07 in all the procedures. These are the destinations with smaller values in B7.03 "Visa requirements", B7.02 "Openness of bilateral Air Service Agreements", and B7.01 "Number of regional trade agreements in force", with the exception of Haiti, which has the highest score in this last indicator. Furthermore, they are affected by their low scores in B6.05 "Timeliness of providing monthly/quarterly T&T data", contained in Pillar B.06, with the exception of Barbados, which takes first place in this issue. Additionally, their low marks in B8.02 "Hotel price index" and B8.03 "Purchasing power parity" in Pillar 8 and also in two

more indicators from Pillar 9, for which Puerto Rico resides in the first position, despite being among the least competitive in Sub-index B. These are "Stringency of environmental regulations" (B9.01) and "Enforcement of environmental regulations" (B9.02).

The largest movements were registered for Barbados and for Trinidad and Tobago. These destinations are 8th and 14th in the TTCI ranking, respectively, and Barbados drops to the 13th and 14th position with the proposed methodologies, while Trinidad and Tobago improve their ranking to 11th place with the methods presented. Barbados ranks first in indicators B6.01, B6.02, and B9.10. This destination also ranks second for B9.03 and B9.07. However, it falters in B8.02, B8.03, B9.08, and B9.09. These lower scores together with the internal weighting processes cause its worsening. Furthermore, it reaches its lowest score in Pillar B.07, which is the most significant for the DP_2 and the DPC procedures, according to the weights. Moreover, the difference between maximum and minimum marks in those indicators for which Barbados reached the lowest scores was greater than the difference between the maximum and minimum for those in which Barbados ranked first. These indicators are contained in those pillars that fail to reach the highest weight with the DP_2 and with the DPC method.

On the other hand, Trinidad and Tobago appear nine times among the lowest-scoring destinations (third and last quartile) compared to 10 times for Barbados. Moreover, Trinidad and Tobago do not reach such great scores as does Barbados. Their main achievement is the second position in B8.04 and third in B9.04, and an additional appearance among the top five in B7.01 and B9.07. However, the values of Trinidad and Tobago in those indicators, for which they occupy positions below 75% of the destinations (14 times in the third and last quartiles) are higher than those for which Barbados is located among the same group of destinations. In this regard, due to the movements, it should be noticed that this is the dimension with the highest number of substitutions (11 values).

Despite the wide variation for certain destinations, the comparison of the values reach reveals the existence of a high similarity with the TTCI and with the scores calculated (Table 9). All the correlations are significant at the 0.01 level. The least correlated to the TTCI are the scores of the DPC, while those for the GPSI are the most highly correlated. Moreover, as in the previous analysis, there are great similarities within the rankings (Table 9). The most similar to the TTCI is the DP_2 ranking, coincident to the highest correlation of the first column in the previous table. However, the remaining correlations remain significant at the 0.01 level.

Table 9. Pearson Correlations (Scores)

	TTCI_B	DP_2_B	DPC_B	GPSI_B
TTCI_B	1			
DP_2_B	0.940**	1		
DPC_B	0.871**	0.946**	1	
GPSI_B	0.909**	0.963**	0.978**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Table 10. Spearman's rho Correlations (Positions)

	TTCI_B	DP_2_B	DPC_B	GPSI_B
TTCI_B	1			
DP_2_B	0.904**	1		
DPC_B	0.882**	0.968**	1	
GPSI_B	0.885**	0.975**	0.988**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

The greatest positive variations with respect to the TTCI are registered for Barbados and Guyana with a fall of five units, and for Trinidad and Tobago which improve by four positions, as explained earlier. The worsening of Guyana is caused by low scores in Pillars B.06 and B.08, and Barbados is affected by Pillars B.07 and B.08. On the other hand, the improvement of Trinidad and Tobago is due to a good general score in B.08.

In comparison with the TTCI ranking, the ranking obtained with the DP_2 is the most stable, with 8 units in the same position, despite registering the highest movement (6 units for Barbados). For the DCP and the GPSI, only 5 and 4 destinations, respectively, remain in the same position with respect to the TTCI. However, the closest rankings are those from the DPC and the GPSI, valid for a 0.988 Spearman correlation coefficient (Table 10).

2.4.1.3 Sub-index C "Infrastructure"

This dimension involves C10 "Air transport infrastructure", C11 "Ground and port infrastructure", and C12 "Tourist service infrastructure", and contains a total of 13 indicators, which are separated into groups of 5, 4, and 4, respectively. The results are published in Table 11. Barbados, Mexico, Panama, Puerto Rico, and Trinidad and Tobago coincide within the five most competitive destinations for all the rankings. As a common characteristic, these destinations have the best scores in almost all the pillars, but they stand out in Pillar C10; however, they show certain variations from the indicators' point of view. Only for indicator C10.01 "Air transport infrastructure" do all these destinations reach values above the mean and the median. Each destination separately achieves good scores in individual indicators within this pillar. Moreover, in general, this group of destinations reach good values not only in their

"Quality of roads" (C11.01), with the exception of Trinidad and Tobago (7th), but also in the "Presence of ATMs accepting Visa cards" (12.04), except for Mexico (6th).

Table 11. Rankings for Sub-index C: "Infrastructure"

Destinations	TTCI Subindex C		DP_2_C		DPC_C		GPSI_C	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Barbados	5.18	1	6.224	1	2.245	1	4.990	1
Colombia	2.92	13	2.25	11	1.017	10	3.121	10
Costa Rica	3.7	7	3.397	9	1.484	7	3.901	7
Dominican Republic	3.68	8	3.667	7	1.480	8	3.676	8
El Salvador	3.32	9	3.641	8	1.256	9	3.316	9
Guatemala	2.95	12	2.449	10	0.960	12	2.950	12
Guyana	2.84	14	1.974	14	0.897	13	2.840	13
Haiti	2.29	17	0.337	17	0.372	17	2.245	17
Honduras	3	11	2.22	12	0.965	11	2.998	11
Jamaica	3.93	5	4.051	6	1.530	6	3.927	6
Mexico	3.83	6	4.7	4	1.705	5	4.026	5
Nicaragua	2.8	15	1.904	15	0.779	15	2.741	15
Panama	4.72	2	5.43	3	2.229	2	4.742	2
Puerto Rico	4.64	3	5.882	2	2.051	3	4.645	3
Suriname	3.01	10	2.049	13	0.839	14	2.785	14
Trinidad and Tobago	4.57	4	4.682	5	1.942	4	4.566	4
Venezuela	2,43	16	0,727	16	0.5556	16	2.5585	16

Source: Author's own.

Mexico ranks first in "Available seat kilometres (domestic and international)" with a mark higher than double the score of the next destination in this indicator. It is also in the first position for indicator C10.6 "Number of operating airlines". It is the only destination placed within the first quartile for this indicator. Moreover, it stands among the top five destinations in the indicators C11.01 "Quality of roads" and C11.04 "Quality of domestic transport network". For all the indicators from this sub-index, Mexico is located in the second quartile, except for the 13th position in C10.05 "Airport density, airports/million pop."

Panama is also well established (first quartile) in 9 of the 13 indicators in the sub-index. Its main strengths are registered in indicators C10.01 "Quality of air transport infrastructure", C11.03 "Quality of port infrastructure", and C12.03 "Presence of major car rental companies", where it ranks first. It is also the second in C10.04 "Aircraft Departures" and third in C11.01 "Ground and port infrastructure". For the remaining indicators, Panama appears above 50% of the destinations, except for its worst score in "Road density and paved road density (km/surface

area)" (11.06+11.07). In this last indicator, Puerto Rico and Barbados attain the maximum value and Trinidad and Tobago ranks fourth.

Barbados also has great behaviour, and attains the highest scores in four indicators in this sub-index. These are: C10.05 "Airport density, airports/million pop.", C11.04 "Quality of domestic transport network", C12.01 "Hotel rooms", and C12.04 "ATMs accepting Visa cards". It is the second most valued according to the "Quality of air transport infrastructure" (C10.01) and the quality of roads (C11.01). Its main concerns in this sub-index are associated to the "Aircraft Departures" (C10.04) and the "Extension of business trips recommended" (C12.03), for which Barbados is in the last quartile.

Puerto Rico also features in the five most competitive destinations in eight out of the 13 indicators analysed. Its main weaknesses are located in Pillar 10, with the last position in indicators (C10.02+10.03) and C10.06. However, it ranks first in the "Quality of roads" (C11.01) and C11.05 "railroad road density". Moreover, it is second in the "Quality of port infrastructure" (C11.03) and the "Extension of business trips recommended" (C12.02).

Trinidad and Tobago appear among the most competitive destinations in only four of the 13 indicators of this dimension. However, in three of these they reach the highest score of the sample. They rank first in C10.04 "Aircraft Departures" C10.05, "Airport density, airports/million pop.", and C12.04 "ATMs accepting Visa cards". These are contained in Pillar C10, consistent with the general behaviour of the most competitive destinations in this subindex. Trinidad and Tobago are second and third according to the weights given by the DP_2 and the DPC, respectively. Moreover, the fourth position in the value of its "paved road density" is sufficient for it to be included within the top five destinations in this subindex. This destination presents intermediate scores in the remaining indicators and its lower values correspond to the 14^{th} position regarding the low "Number of operating airlines" (C10.06) and the small qualification according to the "Extension of business trips recommended" (C12.02).

The five least competitive destinations also coincide in all the sub-indices calculated. Nicaragua, Venezuela, and Haiti remain 15^{th}, 16^{th}, and 17^{th}, respectively, while Guyana and Suriname share the 13^{th} and 14^{th} positions. Haiti and Venezuela remain in the last group in all the pillars contained in this index according to the three proposed methods. Guyana lies outside this latest group in Pillar C.10, Suriname in Pillar C.11, and Nicaragua in Pillar C.12, in the three dimensional indices of DP_2, DPC, and GPSI, respectively. Except for Guyana, in Pillar C.10, the remaining 4 destinations have values below the mean in all the pillars.

When considering the values of the indicators, this group of destinations only achieve individual values among the worst 25% of the scores in C10.01 "Quality of air transport infrastructure". All these destinations are also in the last quartile for indicator C11.03 "Quality of port infrastructure", except for Suriname. Guyana leaves this cluster in C11.04 "Quality of domestic transport network". Venezuela is outside this group of destinations in C11.06+07 "Road density and paved road density (km/surface area)", C12.01 "Hotel rooms", and C12.04 "ATMs accepting Visa cards", while Nicaragua is outside the last quartile due to its "Extension of business trips recommended". Guyana has extreme positive values in C10.05 "Airport density, airports/million pop." (1st) and C11.04 "Quality of domestic transport network" (3rd), while Venezuela ranks third in "Number of operating airlines" (C10.06).

As can be noted in Table 11, there is a great similarity amongst the rankings and, therefore, close behaviour should be expected among the scores. The Pearson correlation coefficients (Table 12) demonstrate this similarity. All the correlations are significant at the 0.01 level. The most similar scores are those of the DPC and the GPSI, despite the differences between their weighting systems. Moreover, the scores most similar to the TTCI are those from the GPSI. The comparison between each pair of rankings reveals that the order reached by the DPC and the GPSI is equal, with a value of 1. They are also the most similar to the TTCI ranking (Table 13).

Table 12. Pearson Correlations (Scores)

	TTCI_C	DP$_2$_C	DPC_C	GPSI_C
TTCI_C	1			
DP$_2$_C	0.972**	1		
DPC_C	0.986**	0.984 **	1	
GPSI_C	0.990**	0.972**	0.994**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Table 13. Spearman's rho Correlations (Positions)

	TTCI_C	DP$_2$_C	DPC_C	GPSI_C
TTCI_C	1			
DP$_2$_C	0.961**	1		
DPC_C	0.966**	0.978**	1	
GPSI_C	0.966**	0.978**	1.000**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

On comparing these two rankings with the TTCI, a major similarity can be observed. Twelve destinations maintain the same position. Moreover, the highest variation is registered by the worsening of 4 units for Suriname. This worsening responds to low scores in indicators that correspond to Pillar C10, which is the most heavily weighted by the DPC. Furthermore, the

lowest scores are found in these indicators for both Pillars C.11 and C.12. The most variable destinations are Mexico, Suriname, and Colombia, which registered the same position in only the DPC and the GPSI rankings. The most stable destinations are Barbados, Haiti, Nicaragua, and Venezuela, with no variation in their positions between the procedures.

2.4.1.4 Sub-index D "Natural and cultural resources"

This sub-index comprises two pillars: "Natural resources" and "Cultural resources and business travel", each with five indicators. The results of the aggregation process are presented in Table 14. The five most and least competitive destinations coincide in all the rankings. Colombia, Costa Rica, Mexico, Panama, and Venezuela are those from the first quartile. They attain the highest scores in the procedures due to their great performance in the pillars considered. These are all continental states and feature among the most extensive of the sample.

Table 14. Rankings for Sub-index D: "Natural and Cultural Resources"

Destinations	TTCI_D		DP_2_D		DPC_D		GPSI_D	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Barbados	1.65	16	6.961	4	0.796	4	0.983	3
Colombia	3.67	2	6.608	6	0.742	6	0.889	9
Costa Rica	3.39	3	8.638	2	0.959	2	1	1
Dominican Republic	2.05	10	4.768	13	0.607	11	0.876	12
El Salvador	1.78	15	5.202	11	0.526	15	0.884	10
Guatemala	2.64	6	5.745	7	0.638	7	0.891	8
Guyana	1.78	14	3.824	14	0.553	13	0.851	14
Haiti	1.3	17	0.523	17	0.343	17	0.724	17
Honduras	2.24	8	5.375	9	0.542	14	0.875	13
Jamaica	1.95	12	5.362	10	0.57	12	0.895	7
Mexico	5.05	1	8.458	3	1	1	0.945	4
Nicaragua	2.28	7	5.076	12	0.631	8	0.878	11
Panama	3.02	5	8.753	1	0.876	3	1	2
Puerto Rico	2.22	9	6.684	5	0.777	5	0.916	5
Suriname	2.01	11	3.567	15	0.626	9	0.833	15
Trinidad and Tobago	1.8	13	5.42	8	0.613	10	0.907	6
Venezuela	3.31	4	2.157	16	0.511	16	0.758	16

Source: Author's own.

According to the indicators, these destinations record a "Number of World Heritage natural sites" (D13.01) that is greater than 75% of the destinations compared, and constitutes their main strength. Their common worst behaviour is located in indicator D13.05 "Quality of natural environment", for which Panama and Colombia are in the second quartile and Mexico and Venezuela in the last, while Costa Rica attains the best score in this aspect. Only Mexico appears once in the third quartile, specifically in the "Total protected areas" (D13.03). It also

appears once in the last quartile, in the same way as Venezuela, due to a low evaluation of the "Quality of its natural environment" (D13.05), as does Panama, located among the worst destinations for their low "Number of World Heritage cultural sites" (D14.01).

Mexico ranks first in 50% of the indicators considered in this dimension. It includes the "Number of World Heritage natural sites" (D13.01), the "Number of World Heritage cultural sites" (D14.01), the number of "Sports stadiums" (D14.03), the highest "Number of international association meetings" (D14.04), and its high "Cultural and entertainment tourism digital demand" (D14.05). Colombia, Costa Rica, and Venezuela are in the first positions in two indicators each, as follows: Colombia has the greatest number of "Total known species" (D13.02) and the best "Oral and intangible cultural heritage" (D14.03); Costa Rica is first in "Natural tourism digital demand" (D13.04) and reached the highest evaluation of the "Quality of natural environment" (D13.05). Venezuela shares the first position with Colombia in D13.02 and has the best "protected area" (D13.03).

Barbados, El Salvador, Guyana, Haiti, and Trinidad and Tobago are the five least competitive destinations in this dimension. They are all comprised within the last quartile in both pillars, except for Guyana and El Salvador in Pillar D13 and D14 respectively for the DP_2 indicator, and El Salvador in Pillar D14 for the DPC. These differences are caused by the inclusion of Guyana in the second quartile for indicators D13.02 "Total known species" and D13.04 "Natural tourism digital demand", both corresponding to the Pillar D13. In the same way, El Salvador stands between 25% and 50% of the highest scores in D14.03 "Sports stadiums" and D14.04 "Number of international association meetings". Barbados is the only destination from this group that reaches a score valid for its inclusion, at least once, in the first quartile. This is due to a good evaluation of the "Quality of natural environment" D13.05, where it ranks third. Except for Haiti, the remaining destinations appear twice each within the units of the second quartile in all the indicators, with the exceptions of D13.03, D13.04, D14.02, and D14.05.

The rankings have an almost equal behaviour (Table 14, above). The difference between the TTCI and the GPSI is caused by the variation of one unit for Trinidad and Tobago and Guyana from the 13^{th} to 14^{th} positions, and vice versa. The remaining destinations maintain exactly the same positions. Despite the differences between the methods, there is a close relationship amongst scores and rankings (Table 15 and 16). All are statistically significant at the 0.01 level. In this sub-index, it is possible to demonstrate the feasibility of the GPSI attaining a result close to that of the WEF. Despite the absence of data in several of the indicators contained in this dimension, the value of 1 for the correlation between these two scores supports this affirmation.

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Table 15. Pearson Correlations (Scores)

	TTCI_D	DP_2_D	DPC_D	GPSI_D
TTCI_D	1			
DP_2_D	0.974**	1		
DPC_D	0.998**	0.982**	1	
GPSI_D	1.000**	0.973**	0.998**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Table 16. Spearman's rho Correlations (Positions)

	TTCI_D	DP_2_D	DPC_D	GPSI_D
TTCI_D	1			
DP_2_D	0.961**	1		
DPC_D	0.995**	0.958**	1	
GPSI_D	0.998**	0.956**	0.998**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

In general, the high correlation between each pair of scores and rankings in all the sub-indices demonstrates the feasibility of the proposals for reliable competitiveness measurements that are in close proximity to the results of the TTCI. Moreover, their explanatory power enables the analysis too be extended and reinforces the dimensional study. The Pearson coefficient demonstrates the same behaviours. The GPSI attains results that are more similar to those from the WEF, except for the sub-index B. This difference may be caused by the amount of missing values that were substituted in seven of the 23 indicators considered within the pillars. The Spearman's rho Correlation coefficients also reveal the closeness between each pair of rankings and, moreover, the highest similarity demonstrated by the GPSI approach compared to the TTCI in each subindex.

Within the best five destinations in the sub-indices, Island States score more highly than Continental States in "Enabling Environment" (A) and "Infrastructure" (C), while for sub-indices "Environmental Sustainability" (B) and "Natural and Cultural Resources" (D), the most competitive destinations are all Continental states. Within 25% of the worst destinations, the number of Continental states was higher than that for the Island States except for Sub-index D. Four Continental and one Island State appear for Sub-index A; 3 vs. 2 in Sub-index B and 4 vs.

1 in Sub-index C. The difference is that 3 Island and 2 Continental States appear amongst the worst destinations in the latter sub-index.

2.4.2 Meta-Index Results

Following the proposal of the WEF to create the TTCI, the global index is generated starting from the dimensional indicators. The DP_2 method is applied to the previous indices created with the same methodology. In order to calculate the global competitiveness index with the DPC and the GPSI approaches, Data Envelopment Analysis is employed to identify the contribution of each dimension to the global measure. As a result, the DEAPC (Data Envelopment Analysis after distance-Principal Component) and the DEAGP (Data Envelopment Analysis after Goal Programming) indices are proposed. The results of the application of DEA in the second stage are shown in Table 17 (DEAPC) and 18 (DEAGP).

Table 17. DEAPC Results

Destinations	Score	Weights				Virtual outputs			
		A	B	C	D	A	B	C	D
Barbados	1	0.255	0.014	0.050	0.062	0.859	0.015	0.111	0.015
Colombia	0.886	0.008	0.442	0.015	0.138	0.015	0.671	0.015	0.186
Costa Rica	1	0.220	0.009	0.010	0.231	0.718	0.015	0.015	0.252
Dominican Republic	0.743	0.117	0.328	0.010	0.033	0.260	0.453	0.015	0.015
El Salvador	0.909	0.008	0.488	0.012	0.051	0.015	0.864	0.015	0.015
Guatemala	0.901	0.007	0.500	0.016	0.020	0.015	0.856	0.015	0.015
Guyana	0.670	0.274	0.013	0.017	0.051	0.625	0.015	0.015	0.015
Haiti	0.343	0.190	0.014	0.040	0.234	0.298	0.015	0.015	0.015
Honduras	0.944	0.008	0.494	0.016	0.029	0.015	0.899	0.015	0.015
Jamaica	0.760	0.007	0.498	0.010	0.039	0.015	0.715	0.015	0.015
Mexico	1	0.007	0.010	0.009	0.463	0.015	0.015	0.015	0.955
Nicaragua	0.912	0.006	0.493	0.019	0.027	0.015	0.867	0.015	0.015
Panama	1	0.121	0.335	0.007	0.017	0.350	0.620	0.015	0.015
Puerto Rico	0.930	0.197	0.014	0.130	0.128	0.580	0.015	0.267	0.068
Suriname	0.756	0.276	0.018	0.018	0.037	0.711	0.015	0.015	0.015
Trinidad and Tobago	0.842	0.006	0.011	0.410	0.051	0.015	0.015	0.797	0.015
Venezuela	0.518	0.210	0.020	0.027	0.219	0.263	0.015	0.015	0.225

Source: Author's own.

The minimum admissible value for the virtual outputs that guarantees the feasibility of the linear problem is 0.015; therefore, this constitutes the lower bound established for this constraint $w_j^{i_0} DI_{ij} \geq \omega;\ \omega \geq 0.015$. Considering the assignation of weights, in both rankings more weights are given to the scores of the sub-indices A "Enabling Environment" and B "T&T Policy and Enabling Conditions" in the form of 4 and 8 units for the DPC and 6 and 7 destinations for the GPSI. The scores represent the level of global competitiveness of the destinations. In both cases,

there are four units in the first position, with the maximum value allowed by DEA: Barbados, Colombia, Mexico, and Panama. These destinations embrace the first positions in all the dimensional indices calculated. Moreover, the highest scores are attained even when the weights of other competitors are employed.

Table 18. DEAGP results

Destinations	Score	Weights				Virtual outputs			
		A	B	C	D	A	B	C	D
Barbados	1	0.003	0.004	0.191	0.009	0.015	0.015	0.955	0.015
Colombia	0.933	0.004	0.180	0.005	0.036	0.015	0.769	0.015	0.133
Costa Rica	1	0.162	0.003	0.004	0.052	0.797	0.015	0.015	0.173
Dominican Republic	0.880	0.119	0.083	0.004	0.007	0.506	0.343	0.015	0.015
El Salvador	0.924	0.004	0.198	0.005	0.009	0.015	0.879	0.015	0.015
Guatemala	0.917	0.004	0.199	0.005	0.006	0.015	0.872	0.015	0.015
Guyana	0.855	0.119	0.081	0.005	0.008	0.503	0.322	0.015	0.015
Haiti	0.758	0.004	0.193	0.007	0.012	0.015	0.713	0.015	0.015
Honduras	0.947	0.004	0.198	0.005	0.007	0.015	0.902	0.015	0.015
Jamaica	0.899	0.118	0.084	0.004	0.008	0.511	0.358	0.015	0.015
Mexico	1	0.003	0.003	0.004	0.191	0.015	0.015	0.015	0.955
Nicaragua	0.929	0.004	0.198	0.005	0.007	0.015	0.884	0.015	0.015
Panama	1	0.003	0.046	0.159	0.005	0.015	0.215	0.755	0.015
Puerto Rico	0.953	0.092	0.004	0.085	0.047	0.442	0.015	0.393	0.103
Suriname	0.856	0.171	0.004	0.005	0.035	0.756	0.015	0.015	0.070
Trinidad and Tobago	0.932	0.003	0.041	0.162	0.008	0.015	0.163	0.739	0.015
Venezuela	0.781	0.082	0.101	0.006	0.036	0.297	0.350	0.015	0.118

Source: Author's own.

The same value for these four destinations in the DEAPC and DEAGP methods causes incomparability. In an effort to prevent this issue, the cross-efficiency matrix is calculated. As a result, the global index for the DEAPC and the DEAGP methods is the average of the indices obtained for each destination, starting from its own scores and weights and also from the set of weights of the remaining destinations. The scores and rankings for all the global indices appear in Table 19.

The results enable a ranking for these methods to be established. By comparison with the TTCI ranking, the DEAGP is found to be the most similar to the WEF. Seven destinations maintain the same location, with an average variation of 0.71 positions (less than one unit) and a variance of 0.471 in contrast to 0.809 for the DP_2 ranking and 4.375 for the DEAPC. The maximum variation registered is 2 units for the Dominican Republic, a worsening due to its negative movement in Sub-index D "Natural and Cultural Resources", and specifically due to a low score in Pillar D13 "Natural Resources". The other destination which varies two positions is

that of Trinidad and Tobago, with an improvement from 7th to 5th position with the DEAGP due to the 4th position in Sub-index C "Infrastructure" and the greater improvement of 4 units with the GPSI index in Sub-index B "T&T Policy and Enabling Conditions", caused by a good score in Pillar B.08 "Price Competitiveness".

Table 19. Global Rankings

Destinations	TTCI		DP_2		DEAPC		DEAGP		Borda Count
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Rank
Barbados	4.08	4	6.961	4	0.749	4	0.897	4	**4**
Colombia	3.73	6	6.608	6	0.740	6	0.852	7	**6**
Costa Rica	4.10	3	8.638	2	0.932	2	0.937	3	**2**
Dominican Republic	3.50	10	4.768	13	0.670	12	0.820	12	**12**
El Salvador	3.41	12	5.202	11	0.702	10	0.822	11	**13**
Guatemala	3.51	9	5.745	7	0.735	7	0.830	9	**7**
Guyana	3.26	15	3.824	14	0.590	14	0.764	14	**14**
Haiti	2.75	17	.523	17	0.429	17	0.657	17	**17**
Honduras	3.41	11	5.375	9	0.707	9	0.824	10	**9**
Jamaica	3.59	8	5.362	10	0.663	13	0.842	8	**11**
Mexico	4.36	1	8.458	3	0.888	3	0.945	2	**3**
Nicaragua	3.37	13	5.076	12	0.743	5	0.813	13	**10**
Panama	4.28	2	8.753	1	0.933	1	0.971	1	**1**
Puerto Rico	3.91	5	6.684	5	0.721	8	0.853	6	**5**
Suriname	3.28	14	3.567	15	0.558	15	0.728	15	**15**
Trinidad and Tobago	3.71	7	5.420	8	0.682	11	0.853	5	**8**
Venezuela	3.18	16	2.157	16	0.443	16	0.716	16	**16**

Source: Author's own.

The DEAPC results are those with the greatest differences with the TTCI. Only 4 destinations remain in the same position, with an average variation of 2 units, and a higher variance value, as was stated before. Nicaragua and Jamaica register the greatest variations, with 8 and 5 positions respectively. Nicaragua improves from 13th to 5th with the DEAPC with respect to the WEF. This is the result of an enhancement of 7 positions in Sub-index A "Enabling Environment", mainly for the Pillar A.02 "Safety and Security", while Jamaica records the largest worsening variation of 4 units caused by the deviation in the same sub-index, due to low values in Pillar A.03 "Health and Hygiene".

The DP_2 ranking also demonstrates a great similarity to the TTCI, with an average variation of 1.06 units between these two rankings. The greatest shift is registered by the Dominican Republic, with a fall of 3 positions also attained in Sub-index D, as explained earlier, and to the

Pillar A.04 "Human Resources and Labour Market", where the 9th position is reached, but with a value closer to the last unit than to the first.

A paired comparison of the rankings reveals that the most similar are the DP_2 and the DEAGP. The four best and worst destinations remain within these groups for both rankings. Seven destinations remain in the same position and there is a minor average variation between them of 0.824. The greatest variation is of only three movements registered by an improvement of Trinidad and Tobago. Although the DEAPC and the DEAGP indices are calculated with the same method in the second stage, these are the indices that differ the most, and even present the greatest contribution to the global index, largely in the sub-indices A and B.

Barbados (4th), Venezuela (16th), and Haiti (17th) constitute those destinations which maintain the same position in all the rankings. Trinidad and Tobago is the destination that always varies from one ranking to another. However, the highest variability among the rankings was registered by Nicaragua. The Pearson correlation and Spearman's rho correlation coefficients in Tables 20 and 21 support the proximity between the rankings obtained. The scores and rankings gathered with the DEAGP method are the closest to the values and order for these destinations published by the WEF.

Table 20. Pearson Correlations (Global Scores)

	TTCI	DP_2	DEAPC	DEAGP	Borda Count
TTCI	1				
DP_2	0.954**	1			
DEAPC	0.886**	0.970**	1		
DEAGP	0.958**	0.981**	0.959**	1	
Borda Count	0.948**	0.963**	0.937**	0.961**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Table 21. Spearman's rho Correlations (Global Positions)

	TTCI	DP_2	DEAPC	DEAGP	Borda Count
TTCI	1				
DP_2	0.961**	1			
DEAPC	0.831**	0.904**	1		
DEAGP	0.980**	0.971**	0.831**	1	
Borda Count	0.951**	0.988**	0.931**	0.951**	1

Source: Author's own.

Despite the similarity of the indices, there are differences between the rankings. It is not possible to establish an overall competitiveness ranking. In order to achieve this goal, it is necessary to create a meta-index starting from the previous classification. As mentioned before,

the ideal method to solve this problem involves the Borda Count, which is widely used to combine two or more rankings (Nuray & Can, 2006; Wu, 2011). The Borda Count approach is applied to the results of the DP_2, of the DEAPC, and to those of the DEAGP. There were two ties according to the global total in creating the ranking. One tie occurred between Colombia and Puerto Rico (5th position), while the other arose between the Dominican Republic and El Salvador in 12th place. In both cases, the ties were broken using the same approach (The Borda Count) by taking the sum of the positions in the dimensional ranking with each methodology as the initial information. This is considered as a suitable approach because it involves all the sub-indices and the outputs of the proposed methods. The final ranking is presented in the last column of Table 19.

Panama is the most competitive destination. It ranks first in all the procedures within the Sub-index B "T&T Policy and Enabling Conditions" and with the DP_2 approach in Sub-index C "Infrastructure". It also achieves three second places and its worst position was the fourth in all the rankings created in Sub-index A "Enabling Environment". In short, it is the only destination that remained among the five most competitive destinations in all the rankings created. Its main strengths are in Sub-index B "T&T Policy and Enabling Conditions", with good records in Pillars B.06 "Prioritization of Travel and Tourism", and B.09 "Environmental Sustainability".

Panama is ranked 33rd in the overall ranking according to the TTCI of the (WEF, 2015). The country has developed a significant tourism sector (approximately 6% of the economy) on the basis of its rich natural resources (20th) and world-class tourist service infrastructure (27th), which offer tourists an enjoyable experience. Panama is a price-competitive destination (32nd), internationally open (23rd) and well-connected thanks to its excellent air transport infrastructure (18th), which allows it to position itself as a travel and trade gateway to Latin America. There are nonetheless aspects where Panama could improve. In terms of human resources (95th), despite the progress made, it is not always easy to find skilled workers (99th), perhaps due to the regulatory barriers to sourcing from the international talent pool (111th) and the limited participation of women in the labour force (112th). In terms of cultural resources (63rd), Panama scores relatively low on the amount of culture and entertainment-related online searches (47th), and could expand its entertainment offer, by including better promotion of its oral and intangible heritage (WEF, 2015).

Costa Rica stands in second position according to the Borda Count method, and has appeared 9 times amongst the most competitive destinations, and 3 times in the second quartile. Its main strengths are located in the "Natural and Cultural Resources" sub-index (D), specifically in its

"Natural Resources" (D.13). Costa Rica holds the best valuation in this topic. Furthermore, it is placed second in the DP_2 and the DPC rankings in the sub-index representative of the Natural and Cultural resources. Costa Rica comes second regarding the presence of World Heritage Cultural sites and achieves the highest score in the evaluation of the natural environment. Its main concerns should be those involved in the third sub-index, where it is affected by the low quality of its roads.

Mexico is the third most competitive, and is located 6 times in the first quartile, with its best position in the first place for all the rankings in the last sub-index "Natural and Cultural resources". This good location is due to the great difference with the remaining competitors in the Number of World Heritage cultural sites (D14.01). Nevertheless, it is positioned five times within the second quartile in all the rankings corresponding to the sub-indices "Enabling environment" and "Travel and Tourism Policy and Enabling Conditions".

In the Global ranking published by the WEF in 2015, Mexico is ranked 30th overall from among the 142 countries compared in the TTCI. Endowed with both natural (4th) and cultural (11th) resources, Mexico ranks 8th and 6th, respectively, in terms of natural and cultural UNESCO World Heritage sites. Digital demand data confirms the importance of natural tourism, with Mexico ranking 18th worldwide for online searches. Another area of strength is the relatively high prioritization of the T&T industry in the country's development strategy (32nd), with approximately 5% of the national budget spent on T&T-related activities (43rd globally) and the Pacific Alliance emphasizing international openness and regional integration. Despite this strong overall performance, several areas for improvement remain, notably safety and security (125th) and environmental sustainability (126th), which are strategically significant given the importance of the country's natural resources. Additionally, certain areas of the business environment could be improved: Mexico ranks low on costs related to construction permits (131st), market competition (114th), and taxation levels (116th) (WEF, 2015).

Barbados, the fourth most competitive destination globally is located within the best destinations in nine rankings. It has the best positions with all the methods in Sub-index A "Enabling environment" and Sub-index C "Infrastructure" with the highest score in six of the 13 topics evaluated in the latter dimension. It is also included within the most competitive destinations for all the methods in the last dimension "Natural and Cultural Resources" (D). Its main issues are contained in Sub-index B "T&T Policy and Enabling Conditions", with positions in the third and last quartile according to the proposed methods. It is included in the last quartile in five of the ten indicators analysed and has the lowest score in three of them:

D13.01 “Number of World Heritage natural sites”, D13.02 “Total known species”, and D14.03 “Sports stadiums”.

Puerto Rico has a similar behaviour to that of Barbados. This is the fifth most competitive destination. Its strengths are the same as those of Barbados, plus a failure in D14.01 “Number of World Heritage cultural sites”. It is among the five most competitive destinations in most of the rankings. Puerto Rico’s best achievement is from sub-index A: “Enabling environment” which is largely dominated by Barbados. This destination maintains its third position with all the methods in this dimension. This attainment is due to its holding first position in 14 of the 40 indicators analysed in the first dimension, six of which are from the Pillar A.01 “Property rights”. The most concerning issues for this destination come from the last sub-index: “Natural and Cultural resources”. Despite having the best valuation of the quality of its natural environment (D13.05), the non-presence of World Heritage Natural sites (D13.01) and only one single World Heritage Cultural site causes its location in the second and third quartile.

Despite the differences between the ranking of the WEF and the ranking obtained with the Borda Count method, there remains great similarity. First, a value of 0.951 for Spearman’s rho correlation coefficient indicates their high statistical relationship. Moreover, five destinations remain in the same position: Barbados (4^{th}), Puerto Rico (5^{th}) in the first quartile, Colombia (6^{th}) (intermediate), Venezuela (16^{th}) and Haiti (17^{th}) remain in the least competitive quartile. The maximum variation of three units corresponds to Jamaica and Nicaragua, with a worsening and an improvement movement, respectively, with the Borda Count ranking. Furthermore, there is an average variation of 1.176 units between the two methods. Only two interquartile changes were registered. Jamaica moved from second to the third quartile with the global ranking (Borda Count) with respect to the TTCI, while Honduras improved from the third to the second quartile.

2.4.2.1 GPSI for global aggregation

As additional information, the GPSI methodology is also employed to calculate a global index. The score is the global index’s value, while strengths and weaknesses are represented by the sum of the deviation variables; that is, the amount by which destinations surpass or fail to achieve the established goals, respectively. In order to determine the feasibility of the GPSI in replicating the WEF rank, a value of zero is conveniently assigned to all the aspiration levels, and the denominator is assigned a value of one to the GPSI function. This transformation is carried out due to the use of the normalized values provided by the WEF dataset. Therefore, the score of the GPSI for each indicator represents only its strengths. The results are presented in

Table 22, where the correlation values between the GPSI and the remaining global scores can also be found, together with the value corresponding to the Spearman's rho coefficient of the rankings.

Table 22: GPSI global results and correlations

Destinations	Score	Rank
Barbados	3.964	4
Colombia	3.802	6
Costa Rica	4.171	3
Dominican Republic	3.529	10
El Salvador	3.420	12
Guatemala	3.548	9
Guyana	3.204	15
Haiti	2.663	17
Honduras	3.440	11
Jamaica	3.612	8
Mexico	4.442	1
Nicaragua	3.397	13
Panama	4.300	2
Puerto Rico	3.839	5
Suriname	3.166	16
Trinidad and Tobago	3.734	7
Venezuela	3.239	14

Pearson Correlation	
TTCI	0.990**
DP_2	0.960**
DEAPC	0.902**
DEAGP	0.968**
Borda Count	0.947**
GPSI	1

Spearman's rho Correlation	
TTCI	0.990**
DP_2	0.956**
DEAPC	0.826**
DEAGP	0.975**
Borda Count	0.946**
GPSI	1

Source: Author's own.

The rankings and values attained demonstrate the feasibility of the GPSI in the creation of a global competitiveness index similar to the TTCI. The correlation values above 0.9 for all the comparisons except for the ranking obtained with the DEAPC (0.826**) demonstrate the strength of the GPSI method in contrast with the methods proposed for the creation of a competitiveness index. Moreover, the GPSI offers the closest values and ranking to that of the TTCI.

This is one of the main advantages of the proposed method for the measurement of tourism destination competitiveness. It reveals the amount by which a destination surpasses the established goals and the representative quantity of the improvement necessity for each indicator, pillar, and sub-index. Additionally, it is possible to increase goal requirements for a more rigorous comparison by means of changing the target values.

2.4.3 Link to other indicators

The correlation between the scores obtained with the proposed approaches, the TTCI scores, and other additional indicators is analysed (e.g., International Tourist Arrivals, Income from International Tourism, International Tourist Expenditure and Travel and Tourism Contribution to GDP). This analysis is proposed thanks to the availability of these values for almost all the countries of the Region, in contrast with the impossibility of gathering other specific indicators. Therefore, depending on their relationship with the scores obtained, they could substitute or be representative of other indicators.

The results (Table 23) reveal that the most correlated values from the additional indicators with the TTCI are the Income from International Tourism (0.606) (significant at the 0.01 level) and the International Tourist Arrivals (0.503), significant at the 0.05 level. Moreover, the Income from International Tourism is also correlated at the 0.05 level with all the scores calculated to create the global indices. The strongest relationship is attained with the GPSI global index (0.637) and the weakest, but still significant, relationship is found with the Meta Index, as calculated with the Borda Count approach. These additional variables are also well-correlated to each other, with values higher than 0.9. As a consequence, it is possible to assume that they share a great amount of common information.

Considering the rankings achieved with the indices and the additional indicators (Table 24), these three additional indicators are also the closest to the TTCI ranking. The rankings of Income from International Tourism and International Tourist Arrivals are significant correlated to the TTCI ranking at the 0.01 level with a value of 0.725 and 0.630, respectively, while the value for the ranking reached by Contribution of Tourism to the GDP is 0.522, significant at the 0.05 level.

Moreover, the rankings of the Income from International Tourism and International Tourist Arrivals also present significant correlations with those obtained with the proposed methods, and the highest score is attained in their relation to the GPSI rank. This is the only ranking with which the Tourism contribution to GDP has a significant correlation. In this regard, it is possible to assume that, due to the correlation of the International Tourist Arrivals and the Income from International Tourism to the TTCI and to the GPSI, and to the remaining rankings, they could be employed as approximations of tourism destination competitiveness rankings. Moreover, they could be included as initial information for the creation of global indices with the proposed methodologies.

Table 23. Pearson Correlations (Scores)

	TTCI Score	DP_2 Score	DEAPC Score	DEAGP Score	GPSI Score	Borda Count Score	Int. Tour. Arrivals	Income from Int. Tourism	Int. Tour. Exp.	T&T GDP
TTCI Score	1									
DP_2_Score	0.954**	1								
DEAPC Score	0.886**	0.970**	1							
DEAGP Score	0.958**	0.981**	0.959**	1						
GPSI_Score	0.990**	0.960**	0.902**	0.968**	1					
Borda Score	0.948**	0.963**	0.937**	0.961**	0.947**	1				
Int. Tour. Arrivals	0.503*	0.41	0.4	0.416	0.531*	0.382	1			
Income from Int. Tourism	0.606**	0.520*	0.502*	0.526*	0.637**	0.493*	0.966**	1		
Int. Tour. Exp.	0.44	0.341	0.301	0.331	0.487*	00.341	0.919**	0.894**	1	
TT_GDP	0.475	0.374	0.359	0.378	0.503*	00.36	0.988**	0.929**	0.945**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Table 24. Spearman's rho Correlations (Ranking)

	TTCI	DP_2	DEAPC	DEAGP	GPSI	Borda Count	Int. Tour. Arrivals	Income from Int. Tourism	Int. Tour. Exp.	T&T GDP
TTCI	1									
DP_2	0.961**	1								
DEAPC	0.831**	0.904**	1							
DEAGP	0.980**	0.971**	0.831**	1						
GPSI	0.990**	0.956**	0.826**	0.975**	1					
Borda	0.951**	0.988**	0.931**	0.951**	0.946**	1				
Int. Tour. Arrivals	0.630**	0.544*	0.522*	0.517*	0.650**	0.549*	1			
Income from Int. Tourism	0.725**	0.637**	0.566*	0.620**	0.740**	0.630**	0.934**	1		
Int. Tour. Exp.	0.363	0.35	0.306	0.289	0.422	0.353	0.706**	0.699**	1	
TT_GDP	0.522*	0.456	0.395	0.444	0.591*	0.458	0.826**	0.804**	0.897**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

Along the same lines, compared to the TTCI, the correlation values indicate that these additional variables could be viewed as good explanatories of the TTCI, the DEAGP, and the Meta index rankings. Among these, the most representative is the Income from International Tourism, which is also significantly correlated to the Meta index results. As a consequence, it is possible to affirm that these variables may be used to create indices with results almost identical to the outputs of the TTCI. Future research should consider this topic.

2.5 The regional tourism competitiveness index

Given the low presence of the Caribbean destinations in the TTCI, and the feasibility of the proposed measures to create a ranking close to the TTCI with a lower requirement for information, the present section aims to propose a competitiveness ranking of tourism destinations that includes the highest possible amount of destinations from the Caribbean region. The proposed method is the DEAGP. It is selected for its ability to include all the indicators, which differs greatly from statistical methods. Furthermore, the remaining advantages are described in Sections 2.2.1.2 (GPSI) and 2.2.1.3 (DEA in second step).

The study comprises 33 destinations from the Caribbean, and includes 16 more destinations than the highest number of countries from the region included in all the TTCI editions. These 16 destinations are also those for which data is available. With regard to the information, it should be take into account that there is no single set of indicators applicable to all the destinations at all times (Pérez, V. et al., 2020). As a result, a dataset similar to that used for the TTCI 2015, 2017 and 2019 editions was created. Twenty-seven indicators were obtained (Table 25), (30% of those indicators contained in the TTCI), representative of all the sub-indices, and 12 from the 14 pillars. Indicators illustrative of Business Environment and Air Transport Infrastructure pillars were impossible to achieve. These pertain to the “Enabling Environment” and “Infrastructure” sub-indices, respectively.

The indicators selected correspond to either objective values or hard data. The first sub-index, “Enabling Environment”, is the most highly represented with 11 indicators, eight of which coincide with those measured in the editions of the TTCI. The three non-coincident indicators are: indicator 3.02, included as a representative of the quality of Human Resources and its demonstrated relationship with tourism development in small island destinations (Jiang et al., 2011). indicator 4.02, proposed as a representative of ITC readiness within the Supporting Resources Indicators (Dwyer et al., 2014) in the destination competitiveness measurement; and

finally, indicator 4.04, used as a representative of the Quality of Energy Supply due to its closeness to this topic, measured by the WEF through the Executive Opinion Survey.

Table 25. Indicators selected

Sub-indexes	Pillars	Indicators
Enabling Environment	Safety and Security	1.01 Homicide cases/100,000 population
		1.02 Road Traffic deaths per 10,000 pop
	Health and Hygiene	2.01 % pop. with access to improved sanitation
		2.02 % pop. with access to improved drinking water
		2.03 HIV prevalence, % adult pop.
	Human Resources and Labour market	3.01 Life expectancy, years
		3.02 Human Development Index
	ICT Readiness	4.01 Individuals using Internet, %
		4.02 Fixed Telephone lines per 100 pop.
		4.03 Mobile phone subscriptions per 100 pop.
		4.04 Net Energy Generation
T&T Policy and Enabling Conditions	Prioritization of Travel & Tourism	5.01 Government Individual T &T Expenditures (% Share of total tourism expenditure)
		5.02 Capital investment in Travel & Tourism (% of total investment)
	International Openness	6.01 Visa requirements
	Price Competitiveness	7.01 GNI per capita
	Environmental Sustainability	8.01 CO_2 Emissions
		8.02 Threatened species
		8.03 Ratio of proportion of tourists to local population (Month of maximum influx)
		8.04 Ratio of proportion of tourist to local population (Month of minimum influx)
Infrastructure	Ground and port infrastructure	9.01 Ratio of cruise passengers to local population
	Tourist Service Infrastructure	10.01 Hotel rooms (rooms per 100 pop)
		10.02 Average length of stay
		10.03 Room occupancy rate
Natural and Cultural Resources	Natural Resources	11.01 Number of World Heritage natural sites
		11.02 Percentage of total protected areas
	Cultural resources and Business Travel	12.01 Number of World Heritage cultural sites
		12.02 Number of international association meetings

Source: WEF (2015).

Notes: Data is compiled from the United Nations World Tourism Organization, the Caribbean Tourism Organization, the World Travel and Tourism Council, the World Bank, the United Nations Development Program, the World Health Organization, the International Union for Conservation of Nature, among others.

The second most highly represented dimension is "T&T Policy and Enabling Conditions". This is comprised of eight indicators among which three are similar to the TTCI (5.01, 6.01, and 8.02). Indicator 5.02 was used as an input in the international destination competitiveness measurement (Assaf & Dwyer, 2013). The CO_2 emissions (8.02) has been part of the environmental dimension in various studies (e.g., Mazanec et al., 2007; Dwyer et al., 2014). The indicator 7.01 is considered owing to its relationship with the GDP and the Purchasing Power Parity of a country. It is proposed as an approach to the economic prosperity within the Market Performance Indicators in Dwyer and Kim's model (Dwyer & Kim, 2003). Indicators 8.03 and 8.04 indicate seasonal pressure on the environmental and social resources of host regions and populations and are relevant in tourism sustainability (Blancas et al., 2010b; Pérez, V. et al., 2016). Consequently, they are directly linked to competitiveness.

The "Infrastructure" sub-index has a single indicator which coincides with the WEF: "Hotel rooms (rooms per 100 pop.)". The proportion of cruise passengers with respect to the local population was employed as a representative of the quality of Port infrastructure, given the importance of cruise tourism for the region (Wood, 2000; McLeod et al., 2017; Chen, J. et al., 2019). In addition, the indicator 10.02 was used by Assaf and Dwyer (2013) to measure destination competitiveness, while indicator 10.03 has been used for a similar purpose by Claver-Cortés et al. (2007) and Tóth (2016). Finally, all the indicators included in the "Natural and Cultural Resources" dimension are considered by the WEF.

The data corresponds to 2013, which is one of the years considered in the calculation of the TTCI published in 2015. The latest update of national information systems and international reports impedes more up-to-date information from being collected. However, there is no missing data in the study. Of the indicators in the study, 56.67% coincide with the information considered by the WEF, while the remaining 43.33% are strong approximations of the topics evaluated by this institution to study destination competitiveness. This closeness ensures that the information used will certainly represents the destinations' competitiveness. The results are compared with the TTCI edition from 2015, which is also the edition that has most Caribbean destinations. It was not possible to attain data from 2015, 2016 or 2017 due to the updating process of the international organizations' reports.

2.5.1 Method

The GPSI is employed to create the dimensional indices, as was explained above. Second, Data Envelopment Analysis (DEA) is proposed to create the global index. The virtual output

constraint used with DEA in the previous study guarantees the inclusion of all the sub-indices in the global index. Moreover, the freedom in the selection of the weights enables us to observe how each destination chooses the weights that guarantee the highest value of the global composite index, which is useful to enrich further analysis. This is a desirable characteristic in the study. Notwithstanding, the use of a different set of weights is associated to the evaluation of the performance of units rather than to the construction of a ranking of units (Kao & Hung, 2005). Hence, practitioners may disagree with the consideration of individual weights for the construction of a ranking of units (see for instance Kao and Hung (2005) for a detailed discussion). In addition, other authors state that the discrimination power of models is higher with common weights (Xiao-Bai & Reeves, 1999).

To this end, the global results will include the results obtained with the model developed in the previous study. Furthermore, a model which maintains the essence of DEA (the free selection of weights) but concludes with the determination of a common base to evaluate all the alternatives has been developed will also be applied. In Xiao-Bai and Reeves (1999), a multi-criteria approach to DEA is studied. A model that simultaneously maximizes the composite index across the set of observations is developed.

$$Min \quad \sum_{i=1}^{n} \alpha_i$$

$$s.t. \quad \sum_{i=1}^{n} w_j GPSI_{ij} + \alpha_i = 1, \qquad \forall i = 1, \dots, n$$

$$w_j GPSI_{ij} \geq \omega, \qquad \forall i = 1, \dots, n, \forall j = 1, \dots, d$$

$$w_j, \alpha_i \geq 0, \qquad \forall i = 1, \dots, n, \forall j = 1, \dots, d$$

Note that this model proposes the minimization of the differences between the composite index and an ideal value equal to unity for the *n* observations. The lower bound for the virtual output has been maintained. The feature of the use of DEA in the global aggregation to measure within this study provides the opportunity to ascertain the contribution of each dimension to each destination's competitiveness level. The use of the virtual output constraint guarantees the inclusion of all the dimensions in the index, and the values of the virtual outputs reveal the dimensional contribution to the global score. Hence, dimensions for which destinations perform poorly will achieve a low value, while higher values will be attained by those dimensions that represent strengths.

First, an index is proposed for each dimension, using the GPSI. In order to prevent the introduction of subjectivity, the same importance level is given to each sub-index, with a value of 1, such as the TTCI which considers each sub-index to be equally important. The same weight is given for each pillar within each sub-index. This is calculated as follows:

$$\omega_{p_i} = \frac{1}{P}$$

where:

p: Number of pillars (*p=1,2,…,P*).

i: Number of sub-indices (*i=1,2,3,4*).

ω_{p_i}: Weight for the pillar *p* of the sub-index *i*.

The indicators' weights are equal for all the indicators in the same pillar and are obtained as:

$$\omega_{j_{p_i}} = \omega_{p_i} * \frac{1}{m},$$

where:

$\omega_{j_{p_i}}$: The weight for the *j*th indicator of the *p*th pillar for the *i*th sub-index.

ω_{p_i}: The weight for the *p*th pillar for the *i*th sub-index.

m: Number of indicators of the *p*th pillar for the *i*th sub-index.

As can be observed, not all the dimensional indicators are positive (Annex III), which is a requirement of DEA. In order to solve this problem, all the variables are transformed into positive by applying a ratio-scale transformation. Conventional DEA models are invariant units and, therefore, a ratio-scale normalization of the data is acceptable (since it has no effect on the final results) (González et al., 2018).

To this end, Maximum Benchmark (MaxBench) and Minimum Benchmark (MinBench) are created. MaxBench is built with 110% of the highest values for all the indicators. Similarly, MinBench's values are 10% lower than the lowest values for each sub-index. The dimensional GPSI indicators are calculated for each benchmark and dimensional indicators are normalized as follows:

$$GPSIN_{ij} = \frac{GPSI_{ij} - GPSI_{MinBench_i}}{GPSI_{MaxBench_i} - GPSI_{MinBench_i}},$$

where:

$GPSIN_{ij}$: Is the normalized score in the *i*th sub-index for the *j*th destination.

$GPSI_{MinBench_i}$: The GPSI value for the MinBench in the *i*th sub-index.

$GPSI_{MaxBench_i}$: The GPSI value for the MaxBench in the *i*th sub-index.

Second, the regional competitiveness is addressed.

2.5.2 Results and discussion

2.5.2.1 GPSI Dimensional results

Table 26 presents the scores, rank, and unfulfillment for each destination in each dimension. The scores represent the differences between the destinations' strengths and weaknesses and are representative of their competitiveness. They denote the difference between the amounts by which a destination exceeds the target value for those indicators that satisfy the requirement levels, and also the distance to the goal for those indicators that fail to attain the desired value. The unfulfillment denotes the number of unreached goals for a destination. They point out indicators with values below the permitted minimum level and those above the established level for positive and negative aspects, respectively. These take account of the destinations' weaknesses. As a result, there is a possibility for a given destination score to be based on only a few or even on a single indicator if it exceeds the rest of the competitors to a high degree above the target value. Along the same lines, scores could be negatively affected by a value far from the established goal.

Table 26. GPSI Dimensional results

Type I/C	Destinations	Enabling Environment			T&T Policy and Enabling Conditions			Infrastructure			Natural and Cultural Resources		
		Score	Rank	Unful-fillment	Score	Rank	Unful-fillment	Score	Rank	Unful-fillment	Score	Rank	Unful-fillment
I	Anguilla	0.271	3	1	0.389	6	0	1.152	5	2	-0.840	23	4
I	Antigua and Barbuda	0.028	15	2	0.534	5	2	0.850	7	0	-0.958	30	4
I	Aruba	0.213	5	2	1.224	3	1	1.003	6	1	-0.954	29	4
I	Bahamas	-0.125	23	5	0.260	8	1	1.618	3	2	-0.917	27	4
I	Barbados	0.174	7	4	0.260	7	2	-0.130	11	1	-0.803	21	4
C	Belize	-0.549	33	9	-0.069	13	4	-0.220	13	3	0.046	10	2
I	Bermuda	0.340	2	3	1.140	4	4	0.370	8	2	-0.869	26	4
I	British Virgin Islands	0.082	11	4	1.283	2	0	2.245	2	0	-0.939	28	4
I	Cayman Islands	0.254	4	2	1.443	1	1	3.816	1	1	-0.965	32	4
C	Colombia	0.101	10	8	-0.512	31	7	-0.706	31	4	2.899	2	0
C	Costa Rica	0.155	8	3	-0.245	18	5	-0.564	20	3	1.264	5	1
I	Cuba	0.132	9	4	-0.500	30	6	-0.679	28	4	1.538	4	1
I	Dominica	0.018	17	5	-0.217	17	5	-0.036	10	2	-0.503	15	3
I	Dominican Republic	-0.197	27	10	-0.309	21	6	-0.579	21	3	-0.104	12	2
C	El Salvador	-0.218	28	9	-0.334	22	6	-0.671	26	3	-0.531	16	4
I	Grenada	0.082	12	3	-0.129	15	4	-0.184	12	2	-0.964	31	4
I	Guadeloupe	-0.061	20	3	0.195	9	3	-0.667	25	4	-0.635	18	3
C	Guatemala	-0.127	24	7	-0.381	24	6	-0.686	29	4	0.492	7	1
C	Guyana	-0.284	30	7	-0.448	28	6	-0.734	32	4	-0.857	25	4
I	Haiti	-0.219	29	8	-0.665	33	7	-0.751	33	3	-0.847	24	4
C	Honduras	-0.543	32	10	-0.393	26	6	-0.648	24	3	0.054	9	2
I	Jamaica	-0.309	31	9	-0.382	25	6	-0.503	19	3	-0.734	19	4
I	Martinique	0.183	6	3	0.195	10	5	-0.462	17	3	-0.762	20	4
C	Mexico	0.974	1	3	-0.338	23	6	-0.630	23	3	7.389	1	0
C	Nicaragua	-0.094	21	9	-0.453	29	6	-0.697	30	3	0.073	8	2
C	Panama	0.002	19	4	-0.274	19	7	-0.599	22	3	1.743	3	0

I	Puerto Rico	0.066	13	3	0.115	12	5	-0.677	27	3	-0.461	13	3
I	St. Kitts and Nevis	0.028	14	3	0.158	11	3	1.233	4	0	-0.832	22	4
I	St. Lucia	-0.118	22	5	-0.085	14	4	0.086	9	0	-0.471	14	3
I	St. Vincent & The Grenadines	-0.134	25	8	-0.136	16	4	-0.281	14	2	-0.972	33	4
C	Suriname	-0.160	26	8	-0.444	27	6	-0.362	15	2	-0.090	11	2
I	Trinidad and Tobago	0.017	18	5	-0.578	32	6	-0.484	18	3	-0.575	17	4
C	Venezuela	0.019	16	5	-0.303	20	6	-0.423	16	3	1.086	6	0

Source: Author's own. Type: I: Island State. C: Continental State

According to Pérez, V. et al. (2020), this information is important for decision-makers since it helps to directly identify those indicators that represent advantages or disadvantages for each destination with the aim of attaining a more competitive position. Due to the absence of external information, or of world or locally established levels for the values of each indicator, the target values are established as the sample mean for both positive and negative indicators. Moreover, these levels may vary, depending on the availability of the information and the demand for the goals' attainment, which constitutes one of the advantages of the proposed method. The analysis may be carried out individually and/or on a general basis.

The results also reveal that there is no single country in the first or last position for all sub-indices. The most similar rankings are "T&T Policy and Enabling Conditions" and "Infrastructure", with an average variation of approximately 4.24 locations. Seven destinations maintain the same positions in both rankings and the highest variation is 16 units for a single destination. The largest difference is presented between "T&T Policy and Enabling Conditions" and "Natural and Cultural Resources" and between "Infrastructure" and "Natural and Cultural Resources", with an average position variation of approximately 14 units for both comparisons. Only one single destination remains in the same position for each comparison, respectively.

Concerning destination scores across sub-indices, it can be observed that extreme values are concentrated in the "Natural and Cultural Resources" index, where 12 destinations reached their best GPSI scores. This is consistent with the affirmation of WEF (2017) regarding the dependence of the majority of these destinations on their rich natural resources. Six destinations reached their best score in "Enabling Environment", 8 in "T&T Policy and Enabling Conditions", and 7 obtained their best competitive level in "Infrastructure". The worst scores are also in the "Natural and Cultural Resources" sub-index with 17 destinations, followed by "Infrastructure", with 13 destinations. Only one and two destinations have their worst GPSI value in "Enabling Environment" and "T&T Policy and Enabling Conditions", respectively. A search within the ten best and worst destinations in each sub-index reveals that islands seem to be more competitive than continental states in three of the destinations, according to the indicators measured. For "Enabling Environment", which captures the general settings necessary to operate in a country, the top ten destinations include 7 islands and 3 continental states. Six of the ten least competitive destinations in this sub-index are continental countries, of which two occupy the lowest positions.

For the next two sub-indices, islands are definitively more competitive than continental states. Islands achieve better general settings necessary for operating in a country and their economies have more availability and quality of physical infrastructure. Islands occupy the first twelve positions in both rankings, while continental countries are in the last positions. In contrast, for "Natural and Cultural Resources", which captures the main reasons to travel, eight continental destinations are within the top ten and only one of them is located in the last ten countries. Despite the natural and cultural richness of island states, continental countries from the region have more potential resources and attractiveness. The most unchanging destinations across sub-indices varies an average of four positions, while the highest difference is 18 positions.

Concerning the "Enabling Environment" dimension, the majority of the countries attain good scores in the "Safety" and "Health and Hygiene" pillars. Close to two thirds of the countries satisfied the aspiration levels for the first pillar, a synonym of safety in the area. The most representative were 26 countries that fulfil the indicator relative to population with reasonable access to an adequate amount of water from an improved source. Furthermore, 22 destinations satisfy the goal representative of HIV prevalence. Issues that cause more concern are in the pillar "ICT readiness". Only the goal regarding Mobile phone subscriptions is fulfilled by more than the 50% of the destinations. The most worrying indicator is that of the Net Energy Generation, for which only four destinations reached the goal established.

Mexico achieves the best value in this sub-index. Its main strength is its energy generation capacity, with a score 15 times higher than the target value. This destination has no other indicator which obtains the best value among all its competitors. Notwithstanding, its great performance therein and good achievement levels in the others indicators is valid to achieve the first position in this sub-index, due to its low presence of weaknesses. As can be observed, only for three indicators does this destination not reach the target value, which is a good general achievement. There are other destinations, such as Anguilla (3rd), the Cayman Islands (4th), and Antigua and Barbuda (15th), which fail to fulfil only one or two goals and obtain a lower score than Mexico. This means that, in spite of satisfying a greater number of goals, the sum of their values with respect to those that do not comply is globally less than for Mexico. In this respect, this methodology analyses the number of goals satisfied and the extent to which they are fulfilled.

For the "T&T Policy and Enabling Conditions" subindex, the "Environmental Sustainability" pillar contains the best and worst behaviour globally. Of all the destinations, 69.69% and 72.72% satisfied the goals referring to CO_2 emissions and threatened species. This is

representative of a major degree of sustainability. Inversely to previous indicators, the majority of countries analysed (78.78% and 69.69%) fail to reach the desired levels of the ratio of the proportion of tourists to the local population in the month of maximum and minimum influx. The top ten destinations in this sub-index have a common positive performance in international openness, despite the majority of negative values for this indicator in the area. As in the previous subindex, this is led by island states.

The infrastructure sub-index has more weaknesses than strengths because there is no indicator for which the majority of destinations fulfilled the goals. The worst issues are Ground and port infrastructure and Hotel rooms, with 23 and 21 destinations with values below the mean, respectively, as the target value establishes. Despite the generalized bad behaviour, the top ten destinations in this sub-index have the ratio of cruise passengers to the local population indicator as a common strength. The average length of stay was a weakness for five of these ten destinations, while the remaining five fulfilled all the criteria.

The last sub-index, "Natural and Cultural Resources", is dominated by continental states. It is also comprised of four indicators concerning inherited characteristics. Only 33%, 36%, 21%, and 27% of destinations fulfil the four established goals, respectively. For the first ten competitive destinations in this sub-index, the most generalized attractiveness relies on the criterion regarding the percentage of total protected areas. Only 2 destinations fail to fulfil the number of international association meetings indicator. This is one of the most representative issues for Mexico, which achieves the first position in this dimension, and this is the country with the highest number of World Heritage cultural sites of the region. Four destinations exceed the target values in all the goals included in the pillars. These countries are in the second, third, and fifth positions, respectively.

2.5.2.2 Global results

The global ranking includes Table 27, with the results of the model with the free selection of weights. Given the unfeasibility of the problem, even for lower values for the virtual outputs, a modification has been made. The virtual output constraints remain higher than zero and the lower bound is applied to the weights. Taking into account that the initial indicators are all positive, a value higher than zero for weights guarantees the presence of all the dimensions in the global ranking. The objective function remains and the constraints are modified as follows:

$$w_j GPSI_{ij} \geq 0, \quad \forall i = 1, \dots, n, \forall j = 1, \dots, d$$
$$w_j \geq \omega, \quad \forall j = 1, \dots, d$$
$$\alpha_i \geq 0, \quad \forall i = 1, \dots, n,$$

and

$$\omega \geq 0.01$$

Table 27: Global Competitiveness Ranking

Destinations	Global Index	Rank	Virtual Output: SubindA	Virtual Output: SubindB	Virtual Output: SubindC	Virtual Output: SubindD
Anguilla	0.721	3	0.238	0.470	0.007	0.007
Antigua and Barbuda	0.436	27	0.004	0.145	0.283	0.004
Aruba	0.481	25	0.005	0.137	0.334	0.005
Bahamas	0.592	17	0.190	0.006	0.391	0.006
Barbados	0.689	5	0.308	0.368	0.007	0.007
Belize	0.532	23	0.005	0.443	0.005	0.078
Bermuda	0.888	2	0.065	0.806	0.009	0.009
British Virgin Islands	0.676	7	0.007	0.026	0.637	0.007
Cayman Islands	0.401	31	0.004	0.004	0.390	0.004
Colombia	0.636	12	0.578	0.046	0.006	0.006
Costa Rica	0.690	4	0.560	0.117	0.007	0.007
Cuba	0.648	8	0.574	0.062	0.006	0.006
Dominica	0.631	14	0.424	0.194	0.006	0.006
Dominican Republic	0.548	22	0.409	0.129	0.005	0.005
El Salvador	0.513	24	0.384	0.120	0.005	0.005
Grenada	0.319	32	0.003	0.252	0.061	0.003
Guadeloupe	0.606	16	0.406	0.189	0.006	0.006
Guatemala	0.556	19	0.463	0.082	0.006	0.006
Guyana	0.419	28	0.273	0.138	0.004	0.004
Haiti	0.409	30	0.310	0.092	0.004	0.004
Honduras	0.417	29	0.297	0.112	0.004	0.004
Jamaica	0.480	26	0.303	0.168	0.005	0.005
Martinique	0.680	6	0.369	0.297	0.007	0.007
Mexico	1	1	0.010	0.010	0.010	0.970
Nicaragua	0.555	20	0.469	0.075	0.006	0.006
Panama	0.631	13	0.510	0.109	0.006	0.006
Puerto Rico	0.641	11	0.483	0.146	0.006	0.006
St. Kitts and Nevis	0.642	10	0.248	0.381	0.006	0.006
St. Lucia	0.615	15	0.388	0.215	0.006	0.006
St. Vincent and The Grenadines	0.265	33	0.003	0.192	0.068	0.003
Suriname	0.555	21	0.412	0.132	0.006	0.006
Trinidad and Tobago	0.563	18	0.430	0.122	0.006	0.006
Venezuela	0.644	9	0.498	0.133	0.006	0.006

Source: Author's own.

The results (Table above) reveal that only six destinations assign this minimum value to one of the virtual outputs, all of which are in Sub-index A "Enabling Environment". Antigua &

Barbuda, Aruba, the British Virgin Islands, Grenada, Mexico, St. Vincent and the Grenadines, and the Cayman Islands. This last destination also gives the minimum weight to the Sub-index B "T&T Policy and Enabling Conditions". For 19 destinations, the highest contribution to the global index is based on the virtual output corresponding to Sub-index A. Eight destinations depend most on Sub-index B "T&T Policy and Enabling Conditions", while for five destinations the highest virtual output is due to the "Infrastructure" (C), and Mexico was the only destination for which the highest contribution to the global score was based on the "Natural and Cultural Resources" (D).

Mexico is the most competitive destination. As stated above, this is mainly due to its first position in Sub-index D, followed by Bermuda, thanks to its good score in Sub-index B. However, its best dimensional position is that of second place in Sub-indices A and C, but the weight assignation gives its highest value to the third dimension. Anguilla ranks third, globally. Its main contribution to the global measure is located in Sub-index B, although it does have a good score in the first virtual output, which is consistent with the third position in the first dimension.

The less competitive destinations are the Cayman Islands (31st), Grenada (32nd), and Saint Vincent and the Grenadines (33rd). The Cayman Islands' highest virtual output is located in Sub-index C, due to its first dimensional position. It is affected by the lower score in Sub-index D, where it reaches the 32nd position. Grenada and Saint Vincent & the Grenadines have their main strength in Sub-index B, according to their virtual output. Although the best position of Grenada is the second in Sub-index C, its score in Sub-index B is higher than that in Sub-index C.

The Pearson Correlation Coefficient between sub-indices is calculated, including the Global Score. A high correlation suggests that it is reasonable to further aggregate the objectives into an index, given that they share some common variance. At the same time, two objectives are found to be completely uncorrelated, or even moderately negatively correlated (in these cases, further aggregation into an index is not advisable) (Athanasoglou et al., 2014).

Table 28 reveals a highly significant positive relationship between "T&T Policy and Enabling Conditions" and "Infrastructure", with a value of 0.820. It can therefore be stated that an improvement of the specific policies or strategic aspects that exert a more direct impact on the T&T industry may cause a greater availability and higher quality of the physical infrastructure of each economy in order to promote a more competitive destination. Another significant

positive relationship exists between "Natural and Cultural Resources" and "Enabling Environment" 0.521. This is caused by the dependence of tourism development on inherited natural and cultural resources. Sub-indices A and D highly influence the global score. The high positive correlations reveal this relationship. In contrast, the "Infrastructure" and the "Natural and Cultural Resources" sub-dimensions do not affect the global score.

Table 28. Pearson Correlation Coefficient

	Enabling Environment	T&T Policy and Enabling Conditions	Infrastructure	Natural and Cultural Resources	Global Index DEAGP
Enabling Environment	1				
T&T Policy and Enabling Conditions	0.352*	1			
Infrastructure	0.238	0.820**	1		
Natural and Cultural Resources	0.521**	-0.353*	-0.329	1	
Global Index DEAGP	0.651**	0.116	-0.049	0.551**	1

** Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Source: Author's own.

A more detailed comparison can be made between our results and those of the WEF in terms of the positions reached by the 17 destinations that are included in both rankings. To perform the comparison, it must first be borne in mind that not all the indicators included in the study are exactly the same as those in the TTCI, as in previous research (e.g., Wu, 2011; Wu et al., 2012; Pérez-Moreno et al., 2016; Pulido-Fernández & Rodríguez-Díaz, 2016; Gómez-Vega & Picazo-Tadeo, 2019; Rodríguez-Díaz & Pulido-Fernández, 2020; Salinas-Fernández et al., 2020). In this case, 30% of the indicators proposed by the WEF have been used, of which only 16 coincide.

An analysis of these 17 destinations reveals that six maintain the same position in both rankings with respect to the remaining competitors. Mexico appears in the 1st position, Puerto Rico and Colombia (5th and 6th), Guatemala (9th), Guyana (15th), and Haiti is the last in the sample (17th). The average variation remains low among the positions in both rankings: approximately 2.35 units. Generally speaking, there is great stability between the two rankings. The widest variation corresponds to Venezuela, which is 16th for the WEF and 4th with the proposed method. This difference is given by the relative good position of Venezuela given its Natural and Cultural Resources and having ranked among the 50% of the most competitive destinations for Enabling Environment and Infrastructure with respect to the remaining competitors under the proposed approach.

Notwithstanding, the Pearson correlation coefficient between the Global Index attained and the score of the 2015 edition of the TTCI for the 17 destinations included in this study resulted in a value of 0.757, significant at the 0.01 level. In addition, Spearman's rho correlation coefficient for the two rankings was also significant at the 0.01 level, with a value of 0.686. The results reveal the strong relationship between the proposed approach and the TTCI outputs, due to the fact that 30% of the indicators included in the TTCI were used. This is considered a very good finding because, in spite of the differences in the number of destinations, indicators, and the calculation method of our study with respect to the WEF, the rankings are very similar. This reveals that the composite indicator's value is highly dependent on the initial information. This is also the case of the values for Spearman's rho correlation (higher than 0.9 for the sub-indices) and the global index attained by Gómez-Vega and Picazo-Tadeo (2019) with respect to the WEF (2017) and the correlations - higher than 0.8 and 0.9 - for the rankings of the different scenarios presented by Rodríguez-Díaz and Pulido-Fernández (2020) compared to the rank of the WEF for the results of the top 21 destinations analysed in their study. Furthermore, similar results are reached by Salinas-Fernández et al. (2020) with a correlation of 0.865 between their outputs and the ranking of the WEF (2017).

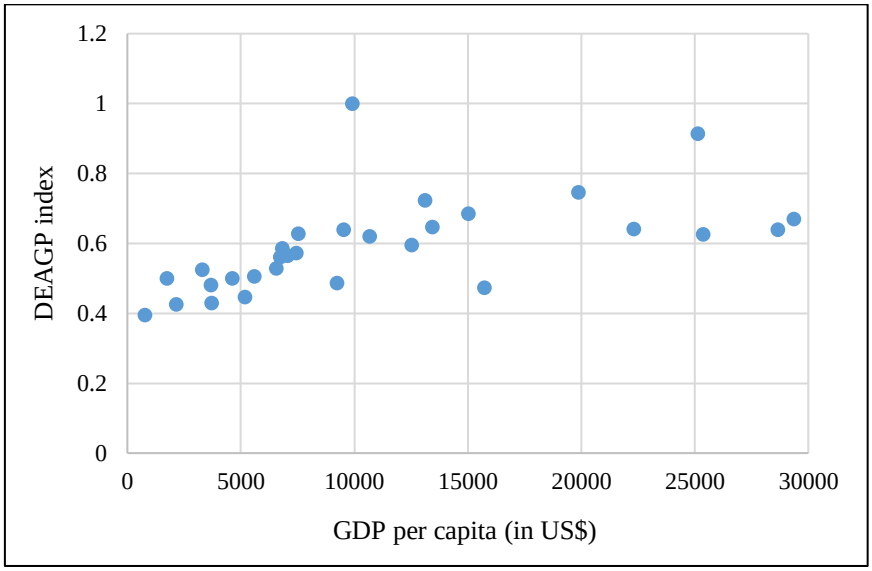
To sum up, for a given destination, a great TTCI global score demonstrates, not only a good level of competitiveness, but also an excellent DEAGP value. Furthermore, both indices have a compensatory character, since the aggregation process enables low scores to be compensated with good values. Both indicators also enable the contribution of the dimensions to the main value to be ascertained. However, while the TTCI only permits the identification of the dimension with the highest value, the DEAGP allows the contribution to the global index through the virtual outputs to be precisely ascertained. As a result, the DEAGP results can determine the exact percentage of the index relative to each dimension.

Considering the dimensional indicators, the results of the TTCI make it possible to identify which indicators contribute more to the score. Moreover, the GPSI allows decision-makers to discriminate between strengths and weaknesses, that is, to differentiate between those indicators that attain or surpass the target values and those that fall short. Furthermore, the distance to the target value can easily be obtained. Consequently, it is possible to ascertain the quantity of good and/or bad indicators and the value by which they should be improved in order to achieve a higher position of competitiveness, while considering their direction of improvement. Additionally, it is possible to determine the improvement value for a single indicator which would enable a dimensional score to be attained that is higher than that of its competitors, given

the compensatory character of the GPSI. Moreover, it is possible to compare the indicator with the minimum values that are considered as being competitive. Therefore, the comparison performed between destinations, based on the outcomes of our proposal, is carried out by considering the competitiveness achievement according to the values established through the goals. These target values could be international competitiveness standards or agreed values and may also differ from indicators depending on their direction of improvement. Last but not least, the GPSI allows various non-compensatory indices to be created in order to consider the competitiveness either through only the strengths or through the weaknesses of each destination.

Finally, the evaluation of the relationship between the competitiveness and quality of life of a destination is analysed by comparing the scores to the destination's GDP per capita. This is a good measurement of a country's standard of living, since it reveals how prosperous each citizen of a country feels it to be. This relationship is included within the key indicators since it summarizes the context and the situation of a country's economy and its T&T sector (WEF, 2015). The Human Development Index is a great representative of the quality of life. Nevertheless, it has been previously included in the global index and, therefore, its relation may lead to double counting. In order to study this relationship, it is advisable to observe the correlation, since a high correlation suggests a high quality of the composite indicator (OECD, 2008) and simple cross-plots are often the best way to illustrate such links (Nardo et al., 2005). The results are graphically tested (Figure 9). Here it is possible to note a significant direct relationship between our composite index and the GDP per capita with a value of 0.704 (Pearson Correlation), statistically significant at the 0.01 level (2-tailed). Furthermore, these results corroborate the findings of Jiang et al. (2011) regarding the link between tourism development and the GDP per capita for Caribbean Small Island Developing Countries, among others. These results demonstrate a major correspondence between the WEF and the outputs of the present proposal, especially since taking into account that of the 30% of the indicators included in the 2015 and 2017 TTCI editions used, only 16 indicators coincide with those of the WEF.

Figure 9: Link between the DEAGP index and GDP per capita



Source: Author's own.

2.6 Conclusions

These studies contribute towards the better understanding of both the competitive capabilities of a destination and the strengths and weaknesses of its competitors and also demonstrate the feasibility of various aggregation methods to build composite indicators for the measurement of tourism destination competitiveness and the ability of such indicators to propose rankings. These methods are proposed through the combination of a variety of algorithms, each with its own advantages and disadvantages.

In the first study, the DP_2- Distance and the Distance Principal Component composite indicators are based on the distance to a reference point. They do not allow all the indicators to be used, although the information selection process does permit the inclusion of a greater amount of information in a smaller set of indicators. The use of internal weights reduces the introduction of subjective information, which is a non-desirable characteristic in the construction of composite indicators. Furthermore, the problem of duplicity of information is solved with the DP_2 by means of the way in which indicators are added to the composite measure. In the case of the DPC index, the duplicity of information should be addressed during the choice of the initial indicators.

The GPSI permits the inclusion of all the indicators in the composite measure. This is a most flexible approach and also compensatory. Furthermore, it facilitates the inclusion of external information through the goals and the weights. This flexibility enables the same importance to be given to all the indicators, as does the TTCI. It has greater explanatory power than the previous indices due to the possibility of directly revealing the strengths and weaknesses of

each destination involved by means of the deviation variables. Moreover, this method allows different results to be obtained, and therefore their combination enriches the analysis of the outputs. The method used in this study was the Net Goal Programming Synthetic Indicator. The GPSI method enables the results closest to those of the TTCI to be attained. Moreover, this methodology contributes towards solving several problems, such as that of the equitable weight distribution within the pillars, the facility to analyse the results, the influence of the size of destinations, and the selection of the target values.

The use of DEA in the second step brings flexibility to the procedure and enables the contribution of each dimension to the overall sustainability value to be identified. The introduction of the virtual output constraint guarantees the inclusion of all the sub-indices in the global measure with at least the minimum representativeness required (ω). Despite its inclusion, however, it is still possible for each unit to search for a better set of weights in order to attain a global measure, which is one of the main advantages of this methodology. Additionally, it is possible that this method identifies those dimensions that represent a strength or a weakness for each destination according to its assignation of weights.

A global competitiveness ranking is achieved by means of a meta-index using the Borda Count approach. This offers the possibility for decision-makers to seek alternatives in order to obtain diverse competitiveness rankings and merge them into a single ordered list. All the global rankings obtained are close to the TTCI ranking and the Meta index has a strong Spearman's rho correlation with the TTCI ranking of 0.951, which demonstrates the validity of the proposed measures.

The second study enables a regional tourism competitiveness ranking to be created that includes countries that have been constantly or recently omitted from the TTCI editions. The information employed constitutes approximately 30% of the data used by the World Economic Forum to calculate the TTCI, and no subjective indicators ware included. This amount includes the four sub-indices and 12 of the 14 pillars that comprise the original ranking. Indicators representative of the "Business Environment" and "Air Transport Infrastructure" pillars are not included. A thorough analysis is carried out by sub-indices, pillars, and indicators. Goal Programming outputs enable the strengths and weaknesses of the destinations under comparison to be identified. Those issues that require more attention at each destination for it to be more competitive could be determined. Meanwhile, the use of DEA for the global index enables the contribution to the global ranking to be observed of each sub-index.

The results reveal that seven of the top ten most competitive destinations in the region are Small Island states. The comparison of the results with those from the WEF (2015), considering the 17 destinations involved in both rankings, reveals a great similarity, despite the modification of the aggregation procedure, as is carried out in other studies. These are significant findings given the low amount of information used. The verified proximity of the results renders our outputs feasible and demonstrates the consistency and representativeness of the indicators employed in the measurement of the competitiveness of the destinations.

In this regard, it is believed that the inclusion of other indicators of the TTCI in the process could enable a more reliable result to be obtained that is closer to the WEF's ranking for these destinations, including those not in the ranking. Furthermore, the study permits the possibility of reducing the number of indicators included in the WEF, while guaranteeing the representativeness of the competitiveness of the destinations and, consequently, allowing the inclusion of more countries in the ranking due to the reduction in data requirements. Consequently, the approach enables the inclusion of more destinations and indicators and, therefore, it can be applicable to other regions.

This is a great finding for other developing countries from the region which have been excluded from the WEF ranking due to data unavailability. This investigation demonstrates the possibility of obtaining an approximation of the global competitiveness ranking with only 30% of the information contained in the original version. Furthermore, the strong relation of the Income from International Tourism and the rankings obtained demonstrates its capacity for be considered as a great explanatory of TDC.

However, although a ranking result is an important factor for benchmarking analysis and reputation management, it is important to be careful regarding its trustworthiness (Wu, 2011). Ranking results can be affected by calculating mistakes, human bias, and the use of a specific ranking method. Future research should encourage the inclusion of subjective indicators in the process, which is an advantageous issue in the measurement of tourism destination competitiveness, and also stimulate the possibility of analysing the competitiveness in a time span and not only at a given moment. It would be possible to study destination performance over time in search of a best competitiveness position.

CHAPTER 3. A DYNAMIC APPROACH TOWARDS THE ANALYS OF DESTINATIONS COMPETITIVENESS

3.1 Introduction

Up to this part of the study the competitiveness of tourism destinations has been addressed as a static phenomenon. This is, it has been measured for a given moment. This stream of research has dominated the literature (Kozak et al., 2010; Botti & Peypoch, 2013; Croes & Kubickova, 2013; Dorta & Hernández-Martín, 2015; Pulido-Fernández & Rodríguez-Díaz, 2016; Goffi & Cucculelli, 2018). However currently, in TDC measurement, the view that has the greatest practical acceptance is derived from the analysis of performance in the sector (tourist arrivals, tourism receipts, etc.), as well as from its similarity to the flows of goods (exports), despite this appeal being less theoretical (Bolaky, 2011; de la Peña et al., 2019).

Crouch (2011) asserted that the dependent variable of destination competitiveness should be the relative performance of a destination. Mazanec et al. (2007) stated that the need for performance orientation as a comprehensive and artfully designed concept of Destination Competitiveness is of little value unless it actually relates to the performance of a destination. Performance refers to the evolution of the tourist sector outputs that can be seen in physical terms (e.g., number of tourists), monetary terms (e.g., tourism receipts), or qualitative terms (e.g., average stay or average expenditure per overnight stay spent at the destination) terms (de la Peña et al., 2019), which are useful in the evaluation of the competitiveness of a destination. However, measuring tourism destination performance over time could prove useful in the analysis of whether the decisions made and the actions carried out to improve their competitiveness have influenced the results positively or negatively.

The articles focused on the analysis of performance (e.g., Craigwell, 2007; Bolaky, 2011; de la Peña et al., 2019) remain rather scarce. Performance refers to the evolution of the tourist sector (de la Peña et al., 2019). Consequently, it is possible to assume that a higher-than-average rate for the indicators analysed could be considered a gain of competitiveness (Dupeyras & MacCallum, 2013). To attain this goal, two different case studies are presented in this chapter. Both studies comprise the 33 destinations from the region but differ with respect to the number of indicators analysed and also with the proposed approach.

The first research involves the so called Dynamic Goal Programming Synthetic Index (Pérez, F. et al., 2018). It is based on the initial Goal Programming Synthetic Index developed by Blancas et al. (2010a) to measure tourism destinations sustainability (Pérez, V. et al., 2017) and

has been previously used in this research as a feasible static approach (Chapter 2). The dynamic index may easily be applicable to the objective of the present research regarding the determination of the variations on the level of competitiveness of tourism destinations over time. As a result, competitiveness could be evaluated through destination performance (Dupeyras & MacCallum, 2013; de la Peña et al., 2019).

The proposed method (Pérez, F. et al., 2018) is composed of two components, called the catch-up and innovation components. The catch-up component measures changes in competitiveness over time for each destination relative to its own deviation values. In contrast, the innovation component mainly measures changes in aspiration levels through time (i.e., it takes into account changing competitiveness objectives over time). This method could be applied to analyse competitiveness over a period of more than two years, which would provide information of a more detailed nature, but would also lead to complications in the results (Pérez, F. et al., 2018). The information employed involves 35 indicators measured for 2007 and 2015. Among the indicators are those representative of the TTCI used in Chapter 2, and others, called Key indicators, which are not included in the TTCI but are still representative of the results of the travel and tourism industry.

The second study analyses the performance of tourist destinations towards a better competitive position during a time span. The proposal involves observing a destination's performance with respect to its competitors (Cracolici & Nijkamp, 2008; WEF, 2017; Goffi & Cucculelli, 2018), and also with respect to itself (Dwyer et al., 2016; Drakulić Kovačević et al., 2018). To this end, it is proposed that the slope of the regression equation be used for each indicator in each destination. This enables the average performance of a destination to be identified in a time span. As a result, competitiveness can be analysed as a dynamic and not as a static approach.

The proposal allows the inclusion of all the information available in each indicator, in such a way that a destination's performance is not only affected by the initial and final values, but also by all the intermediate values from the time span. Additionally, Cluster Analysis is proposed to group destinations according to their performance level in the indicators studied. The data used for this study corresponds to the 2004 – 2016 period. These are the indicators that refer to the tourism activity measured for the World Travel and Tourism Council (WTTC) for each economy.

3.2 Case study: The Dynamic Goal Programming Synthetic Index

3.2.1 The Index

The procedure to develop a new dynamic synthetic indicator is due to Pérez, F. et al. (2018), and is created based on the GPSI (Blancas et al., 2010a) as described in Chapter 2. Once the GPSI is defined, this approach involves: (1) its calculation for two temporary instants; (2) the estimation of the dynamic net goal programming indicators; and (3) its decomposition into catch-up and innovation components. The following description corresponds to steps 2 and 3.

Subsequent to GPSI explanation (Section 2.2.1.2), it is assumed that the information of each destination is available for two different temporary instants t_1 and t_2, for which the aspiration levels ($u_1$and u_2) are also available. The Net Goal Programming Synthetic Index for the *i*th destination ($GPSI_i^N$), denoted as $NGPI_i$, can be calculated either for one or the other time instant as follows:

For the temporary instant t_1:

$$NGPI_i^{t_1[u_1]} = \sum_{j \in J} w_j \frac{\left(p_{ijt_1}^+ - n_{ijt_1}^+\right)}{u_{jt_1}^+} + \sum_{k \in K} w_k \frac{\left(n_{ikt_1}^- - p_{ikt_1}^-\right)}{u_{kt_1}^-}$$

where $p_{ijt_1}^+, p_{ikt_1}^-$ are the positive deviation variables and $n_{ijt_1}^+, n_{ikt_1}^-$, are the negative deviation variables obtained when the *i*th destination is evaluated at the temporary instant t_1. All these variables are normalized by the aspiration levels defined at the temporary instant t_1.

Likewise, for the temporary instant t_2, using the corresponding aspiration levels defined for t_2, the $NGPI_i$ is as follows:

$$NGPI_i^{t_2[u_2]} = \sum_{j \in J} w_j \frac{\left(p_{ijt_2}^+ - n_{ijt_2}^+\right)}{u_{jt_2}^+} + \sum_{k \in K} w_k \frac{\left(n_{ikt_2}^- - p_{ikt_2}^-\right)}{u_{kt_2}^-}$$

where $p_{ijt_2}^+, p_{ikt_2}^-$ and $n_{ijt_2}^+, n_{ikt_2}^-$, are the positive and negative deviation variables obtained, respectively, when the *i*th destination is evaluated at the temporary instant t_2. All these variables are also normalized by the aspiration levels defined at the temporary instant t_2.

Then, the dynamic net goal programming indicator for the *i*th tourism destination $\left(\Delta NGPI_i^{t_1[u_1];t_2[u_2]}\right)$ is therefore defined as the difference between $NGPI_i^{t_2[u_2]}$ and $NGPI_i^{t_1[u_1]}$, in order to evaluate the change in competitiveness over time:

$$\Delta NGPI_i^{t_1[u_1];t_2[u_2]} = NGPI_i^{t_2[u_2]} - NGPI_i^{t_1[u_1]}$$

The following operation reveals an easily interpretable dynamic indicator that provides the maximum amount of information regarding change over time for each tourism destination:

$$\Delta NGPI_i^{t_1[u_1];t_2[u_2]} = NGPI_i^{t_2[u_2]} - NGPI_i^{t_1[u_2]} + NGPI_i^{t_1[u_2]} - NGPI_i^{t_1[u_1]}$$

$$= \Delta NGPI_i^{t_1[u_2];t_2[u_2]} + \Delta NGPI_i^{t_1[u_1];t_1[u_2]}$$

wherein $\Delta NGPI_i^{t_1[u_1];t_2[u_2]}$ is decomposed into two components or into as many components as there are years (sub-periods) included in the time span. If more than two years are analysed, then the decomposition of the dynamic indicator into the factors between the first and last year could be separated into those occurring between pairs of years (Pérez, F. et al., 2018). This provides information of a more detailed nature regarding the competitiveness change across time, although it does complicate the analysis.

The first component $\left(\Delta NGPI_i^{t_1[u_2];t_2[u_2]}\right)$ enables the changes produced in the *i*th destination to be evaluated due to internal improvements in its performance (i.e., changes relative to its own deviation variables, all of which are normalized by aspiration levels defined in t_2). The second component, $\Delta NGPI_i^{t_1[u_1];t_1[u_2]}$, enables changes relative to external issues to be evaluated (i.e., changes due to newly defined aspiration levels, using the value of each initial indicator in t_1). Following the productivity assessment nomenclature, these two drivers of competitiveness change are called catch-up and innovation components, respectively (Madden & Savage, 1999).

Similarly, $\Delta NGPI_i^{t_1[u_1];t_1[u_2]}$ can be decomposed as follows:

$$\Delta NGPI_i^{t_1[u_1];t_2[u_2]} = NGPI_i^{t_2[u_2]} - NGPI_i^{t_2[u_1]} + NGPI_i^{t_2[u_1]} - NGPI_i^{t_1[u_1]}$$

$$= \Delta NGPI_i^{t_1[u_1];t_2[u_1]} + \Delta NGPI_i^{t_2[u_1];t_2[u_2]}$$

In this case, $\Delta NGPI_i^{t_1[u_1];t_2[u_1]}$ enables the changes made in the *i*th destination to be evaluated in response to the internal improvement of its performance (i.e., changes due to its own deviation variables, all of which are normalized by the aspiration levels defined in t_1), whereas $\Delta NGPI_i^{t_2[u_1];t_2[u_2]}$ enables the changes made in response to external factors to be evaluated (i.e., changes due to the establishment of newly defined aspiration levels, using the value of each initial indicator in t_2). The $\Delta NGPI_i^{t_1[u_1];t_2[u_2]}$ can easily be interpreted and, for each unit (tourism destination), its internal (catch-up) and external (innovation) achievements can be

determined. This allows the success of the policies, investments, and strategies implemented by a destination/country to be verified.

3.2.2 Data

The 33 destinations previously analysed are considered, and the descriptive statistics for the data corresponding to the 35 indicators are shown in Table 29 (below) for 2007 and 2015. As in Chapter two, these indicators are grouped in accordance with the TTCI sub-indices and pillars (WEF, 2017) with the exception of the "Business Environment" and "Air Transport Infrastructure" pillars. A new sub-index has been added, representative of the "Outputs of the tourism sector" in each destination. It includes several indicators, among which are those considered "Key indicators" in each "Country profile" in the Travel and Tourism Competitiveness Report (TTCR). These are the indicators from 13.01 to 15.04.

These additional indicators are included since the success of the tourism destination depends on both the supply side and the demand side. Tourism destination competitiveness on the demand side is closely related to the quality of the whole tourism experience. On the supply side, destination competitiveness is more concerned with the economic benefits of the destination (revenues, employment, the sustainable growth of the destination, and the firms within this destination) (Dimoska & Trimcev, 2012). Therefore, the joint use of indicators that are representative of both demand and supply is convenient in analysing TDC.

For positive indicators, the aspiration level is 80% of their average values, while for negative indicators, the reciprocal percentage of the average values is proposed, following the proposal of Pérez, F. et al. (2018). For those indicators for which the data from the continent is available, the reference value is this value calculated for Latin America and the Caribbean region, offered by the same source. This is the case for indicators (1.01, 2.01, 2.02, 2.03, 3.01, 3.02, 4.01, 4.02, 4.03, 7.01, and 8.01). Their aspiration levels are calculated using the same operation as that for the average of the remaining indicators, but with respect to the value for Latin America and the Caribbean region.

Table 29. Indicator descriptive statistics for t_1 and t_2

Sub-index	Pillar	Indicator	Sign	Unit	2007		2015	
					Average	Std. dev.	Average	Std. dev.
Enabling Environment	Safety and Security	1.01 Homicide cases/100,000 population	Negative	Ratio	20.98	16.27	22.79	21.29
		1.02 Road Traffic deaths per 10,000 pop.	Negative	Ratio	14.98	8.01	13.13	7.93
	Health and Hygiene	2.01 % pop. with access to improved sanitation	Positive	%	82.52	15.84	84.66	16.75
		2.02 % pop. with access to improved drinking water	Positive	%	91.83	8.36	93.31	8.88
		2.03 HIV deaths per 100,000 pop.	Negative	Ratio	14.29	16.25	11.63	14.98
	Human Resources and Labour market	3.01 Life expectancy, years	Positive	Years	74.07	4.38	75.41	4.17
		3.02 Human Development Index	Positive	index	0.77	0.11	0.76	0.09
	ICT Readiness	4.01 Individuals using Internet	Positive	%	26.40	16.27	54.55	21.61
		4.02 Fixed Telephone lines per 100 pop.	Positive	Ratio	28.70	20.63	21.27	12.94
		4.03 Mobile phone subscriptions per 100 pop.	Positive	Ratio	87.30	40.48	114.95	38.94
T&T Policy and Enabling Conditions	Prioritization of Travel & Tourism	5.01 Government Individual Travel & Tourism Spending (% share of total tourism expenditure)	Positive	%	9.70	7.77	9.98	8.04
		5.02 Capital Investment in Travel & Tourism (% of total investment)	Positive	%	10.71	8.10	12.70	9.52
	International Openness	6.01 Visa Free access	Positive	units	92.79	36.42	123.42	37.68
	Price Competitiveness	7.01 GNI per capita	Positive	Ratio	14985.14	22788.76	16429.04	18807.03
		7.02 Domestic T&T Spending (% share of GDP)	Positive	%	3.47	1.61	3.74	1.75
	Environmental Sustainability	8.01 CO_2 Emissions	Negative	Ratio	5.18	6.77	4.88	5.98
		8.02 % of Threatened species	Negative	%	10.38	8.61	15.86	10.23
		8.03 Ratio tourists / Local population	Negative	Ratio	1.91	2.99	1.95	3.09
Infrastructure	Ground and port infrastructure	9.01 Ratio of cruise passengers to local population	Positive	Ratio	3.26	7.01	3.64	6.42
	Tourist Service Infrastructure	10.01 Hotel rooms (rooms per 100 pop.)	Positive	Ratio	2.08	2.39	2.11	2.47
		10.02 Average length of the stay	Positive	nights	9.12	4.90	8.90	3.81

		10.03 Room occupancy rate	Positive	%	61.20	14.22	59.70	9.77
Natural and Cultural Resources	Natural and Cultural Resources	11.01 Number of World Heritage natural sites	Positive	Units	0.55	0.94	0.64	1.19
		11.02 Percentage of total protected areas	Positive	%	7.59	8.74	5.59	7.91
		11.03 Number of World Heritage cultural sites	Positive	Units	1.61	4.35	1.82	4.94
		11.04 Net Energy Generation per capita	Positive	Ratio	1.54	1.75	1.67	1.90
	Business travel	12.01 Number of international association meetings	Positive	Units	11.00	25.61	16.76	39.06
		12.02 10. Business Travel & Tourism Spending (% share of GDP)	Positive	%	1.02	0.65	1.15	0.71
Tourist activity outputs	Tourist Arrivals	13.01 Tourist arrivals' Average annual growth (Five years)	Positive	Ratio	9.81	12.77	4.63	4.69
	Income from Tourism	14.01 Country income from tourism as a percentage of the region	Positive	%	3.03	5.55	3.03	5.48
		14.02 Average expenditure per day	Positive	Ratio	131.13	92.07	169.85	125.72
	Macro-economic Contribution	15.01 Travel & Tourism Total Contribution to GDP (% share of GDP)	Positive	%	22.35	16.99	25.19	22.73
		15.02 Internal Travel & Tourism Consumption (% share of GDP)	Positive	%	10.73	7.23	12.29	10.21
		15.03 Travel & Tourism Total Contribution to Employment (% share of country total employment)	Positive	%	24.09	21.46	24.77	22.30
		15.04 Visitor Exports (% share of country total exports of goods and services)	Positive	%	30.28	22.71	33.56	25.06

Source: Author's own.

3.2.3 Results and discussion

The NGPSI values for 2007 and 2015 are presented in Table 30, together with the ranking of each country and the change in 2015 respect to 2007.

Table 30. Results for 2007 and 2015

Destinations	$NGPSI^{2007:[u2007]}$	Rank 2007	$NGPSI^{2015:[u2015]}$	Rank 2015	Change (2015-2007)
Anguilla	0.7300	5	0.6856	5	-0.0443
Antigua and Barbuda	0.6014	6	0.5285	6	-0.0729
Aruba	0.4546	7	0.7048	4	0.2502
Bahamas	0.4091	10	0.4027	9	-0.0064
Barbados	0.4298	9	0.3846	10	-0.0452
Belize	0.1247	21	0.1465	19	0.0218
Bermuda	0.9860	3	0.3810	11	-0.6051
British Virgin Islands	0.8941	4	0.7219	3	-0.1722
Cayman Islands	1.1031	2	0.8464	2	-0.2567
Colombia	0.4403	8	0.4233	7	-0.0169
Costa Rica	0.3452	13	0.1987	15	-0.1465
Cuba	0.1772	18	0.1668	18	-0.0104
Dominica	0.1534	19	0.1922	16	0.0388
Dominican Republic	0.1824	17	0.1868	17	0.0044
El Salvador	-0.1004	28	-0.1521	29	-0.0517
Grenada	0.0922	23	0.1389	20	0.0467
Guadeloupe	0.2880	15	0.0112	24	-0.2768
Guatemala	0.1241	22	-0.0319	26	-0.1559
Guyana	-0.2577	31	-0.2278	31	0.0299
Haiti	-0.4132	33	-0.4989	33	-0.0857
Honduras	-0.0349	26	0.0950	23	0.1299
Jamaica	-0.0706	27	-0.0254	25	0.0452
Martinique	0.0893	24	0.1100	21	0.0207
Mexico	1.3853	1	1.4690	1	0.0837
Nicaragua	-0.1646	30	-0.0360	27	0.1287
Panama	0.2323	16	0.2754	14	0.0431
Puerto Rico	0.1500	20	0.1056	22	-0.0444
Saint Lucia	0.3349	14	0.4054	8	0.0705
St. Kitts and Nevis	0.3473	12	0.3320	12	-0.0153
St. Vincent and the Grenadines	0.0354	25	-0.0417	28	-0.0772
Suriname	-0.1250	29	-0.1925	30	-0.0676
Trinidad and Tobago	-0.2731	32	-0.2603	32	0.0128
Venezuela	0.3485	11	0.2958	13	-0.0527

Source: Author's own.

From the 33 destinations, 25 and 24 (75.76% and 72.73%) destinations achieved positive NGPSI values in 2007 and 2015, respectively. This indicates a generally high level of competitiveness in accordance with the desired levels established, with higher values for

strengths than weaknesses in the majority of the destinations. Twenty-three destinations reached positive scores in both 2007 and 2015, while 7 attained negative values (greater weaknesses than strengths), and 3 reached GPSI values with different signs. Two destinations were positive in 2007 and remained negative in 2015 and just one passes from negative to positive at the end of the period.

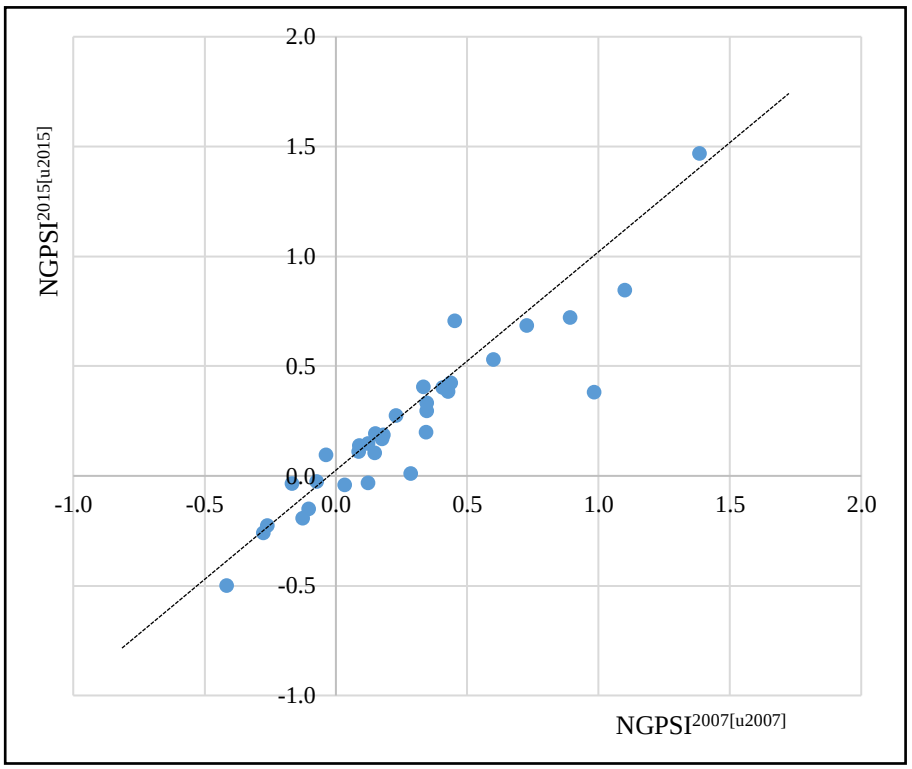
Ten destinations maintain the same position in both rankings. Mexico and the Cayman Islands are the most competitive, while Guyana, Trinidad and Tobago, and Haiti remain in the last 3 positions. There is major stability between the rankings with an average variation of two units in the period. Guadeloupe registered the highest variability by falling 9 positions. The following greatest movement is for Bermuda, 8 positions lost (3^{rd} to 11^{th}) and the last noticeable movement responds to the improvement of Saint Lucia (from 14^{th} to 8^{th}). All these destinations reached positive scores in both rankings.

The highest improvement score corresponds to Aruba (0.2502), with a difference higher than 50% above the following destination, according to the improvement score. Aruba also recorded positive values in both moments and varies three positions. In contrast, Bermuda registered the greatest drop in score, even greater than for Aruba, in absolute values. Bermuda ranked third in its degree of competitiveness in 2007 and eleventh in 2015. Its NGPI scores declined from 0.986 to 0.381, sharper than any other destination between 2007 and 2015. It was preceded by Guadeloupe with a worsening value of (-0.2768) and nine positions behind its location in 2007, as explained above. Haiti remained in the last position, despite having a smaller decrease in value in the period compared to Costa Rica, Guatemala, the British Virgin Islands, the Cayman Islands, Guadeloupe, and Bermuda. Nevertheless, Haiti's score remains the lowest of the region. However, except for Guatemala, the remaining aforementioned destinations obtained a lower score in 2015 than in 2007, although they did remain positive. As a result, these destinations have more strengths than weaknesses.

The values for the 33 destinations in both years also appear in Figure 10. The dotted line bisects the trend in scores and the points located along the line represent destinations whose GPSI scores remain unchanged in the years analysed; that is, those destinations for which the relative competitiveness level remains constant over the period. In contrast, the destinations located above (or below) the discontinuous line are those whose relative competitiveness has improved (or worsened) from 2007 to 2015.

The graph (Figure 10) shows that 14 of the 33 destinations (42%) improved in their degree of competitiveness from 2007 to 2015, whereas the remaining 19 destinations (58%) declined in their degree of competitiveness over the same time span. There is no destination with unchanged values. The Dominican Republic has the closest values with a small difference of 0.0044 higher for 2015.

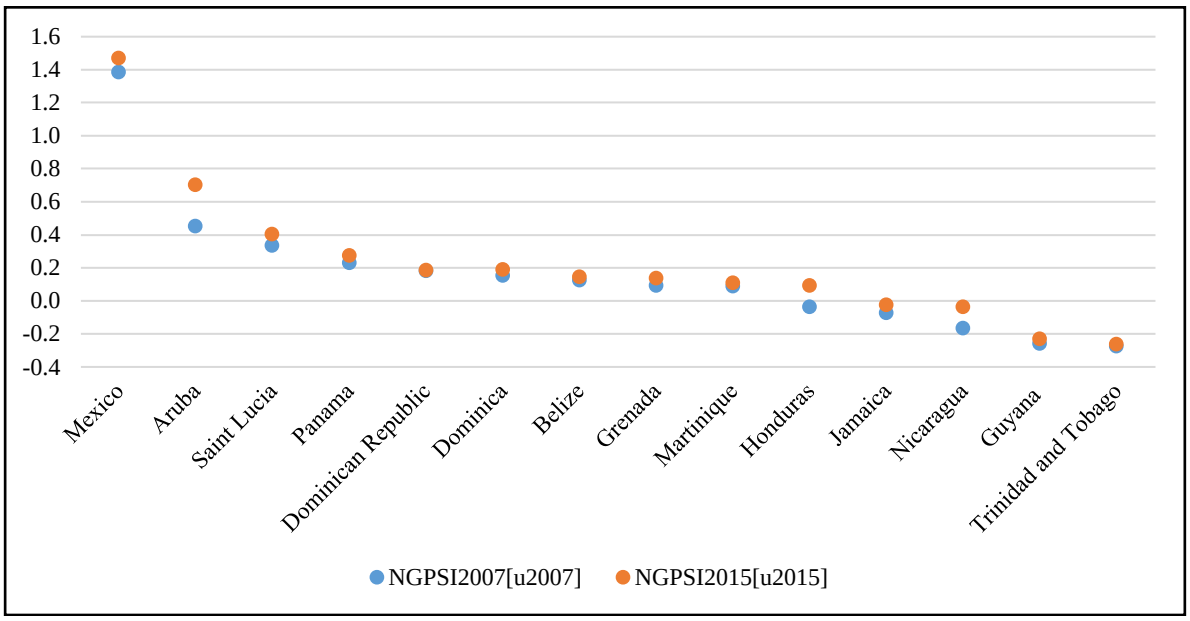
Figure 10. Net Goal Programming Indicator (NGPSI)



Source: Author's own.

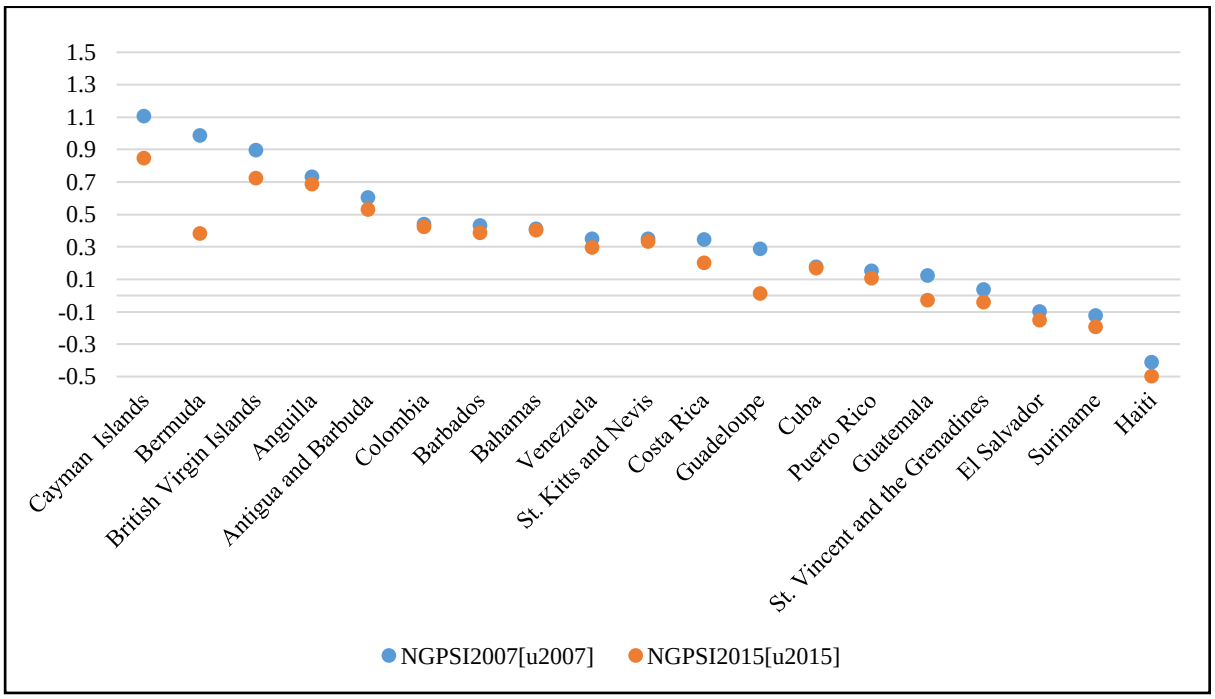
Those destinations which improved their competitiveness level from 2007 to 2015 were, in decreasing order, Aruba, Honduras, Nicaragua, Mexico, Saint Lucia, Grenada, Jamaica, Panama, Dominica, Guyana, Belize, Martinique, Trinidad and Tobago, and the Dominican Republic (Figure 10). Five of these (Honduras, Nicaragua, Jamaica, Guyana, and Trinidad and Tobago) improved due to negative competitiveness scores in 2007 (which means they reached more weaknesses than strengths that year). Among those five destinations, only Honduras achieved a positive score in 2015 (that is, its strengths outweighed its weaknesses); the remaining four destinations still have negative values, but lower than in 2007. Despite these negative outputs, it signifies an improvement in their degree of competitiveness over the time span. Among those whose situations worsen (Figure 11), Guatemala and St. Vincent and the Grenadines passed from positive to negative in 2015; while the weaknesses from El Salvador, Suriname, and Haiti were greater than their strengths in 2007, and even more so in 2015.

Figure 11. Synthetic indicator for the 14 destinations that improved in 2015 with respect to 2007



Source: Author's own.

Figure 12. Synthetic indicator for the 19 destinations that worsened in 2015 with respect to 2007



Source: Author's own.

The decomposition of the dynamic synthetic index helps to reveal whether the causes of the variations in the levels of competitiveness are due to internal or external factors. As explained above, the dynamic synthetic indicator can be decomposed into catch-up and innovation indices, which enables the main factors driving changes in competitiveness to be identified. The second decomposition was employed to explain this issue, by taking into account that the internal improvement (catch-up) of a given destination is due to its own deviation variables

normalized for the aspiration levels defined in t_1. A destination's change caused by external factors can be measured by the newly defined aspiration levels, while using the value of each initial indicator in t_2. The catch-up index, the innovation index, and the $\Delta GPSI$ are shown in Table 31.

Table 31. ΔGPSI decomposed into the two possible alternatives

Destinations	Decomposition 1		Decomposition 2		ΔGPSI	Rank
	Catch-up index	Innovation index	Catch-up index	Innovation index		
Anguilla	0.087	-0.132	-0.216	0.171	-0.044	19
Antigua and Barbuda	0.082	-0.155	-0.202	0.129	-0.073	25
Aruba	0.387	-0.137	-0.211	0.461	0.250	1
Bahamas	0.159	-0.166	-0.222	0.215	-0.006	15
Barbados	0.111	-0.157	-0.179	0.134	-0.045	21
Belize	0.075	-0.053	-0.071	0.093	0.022	11
Bermuda	-0.284	-0.321	-0.328	-0.277	-0.605	33
British Virgin Islands	0.013	-0.185	-0.214	0.042	-0.172	30
Cayman Islands	0.021	-0.277	-0.276	0.020	-0.257	31
Colombia	-0.059	0.042	-0.229	0.212	-0.017	18
Costa Rica	-0.124	-0.023	-0.146	0.000	-0.147	28
Cuba	0.047	-0.057	-0.059	0.049	-0.010	16
Dominica	0.096	-0.057	-0.103	0.142	0.039	9
Dominican Republic	0.103	-0.099	-0.156	0.161	0.004	14
El Salvador	-0.037	-0.015	-0.097	0.045	-0.052	22
Grenada	0.131	-0.084	-0.109	0.156	0.047	6
Guadeloupe	-0.172	-0.105	-0.107	-0.170	-0.277	32
Guatemala	-0.168	0.012	-0.112	-0.044	-0.156	29
Guyana	0.068	-0.038	-0.049	0.079	0.030	10
Haiti	-0.281	0.196	-0.038	-0.047	-0.086	27
Honduras	0.138	-0.008	-0.083	0.213	0.130	2
Jamaica	0.083	-0.038	-0.084	0.129	0.045	7
Martinique	0.104	-0.083	-0.155	0.175	0.021	12
Mexico	0.351	-0.267	-0.341	0.425	0.084	4
Nicaragua	0.114	0.015	-0.034	0.163	0.129	3
Panama	0.065	-0.022	-0.140	0.183	0.043	8
Puerto Rico	0.065	-0.110	-0.180	0.136	-0.044	20
Saint Lucia	0.184	-0.113	-0.182	0.253	0.071	5
St. Kitts and Nevis	0.094	-0.109	-0.149	0.134	-0.015	17
St. Vincent and the Grenadines	0.006	-0.083	-0.130	0.052	-0.077	26
Suriname	-0.108	0.040	-0.093	0.025	-0.068	24
Trinidad and Tobago	0.088	-0.075	-0.148	0.161	0.013	13
Venezuela	-0.099	0.046	0.000	-0.052	-0.053	23

Source: Author's own.

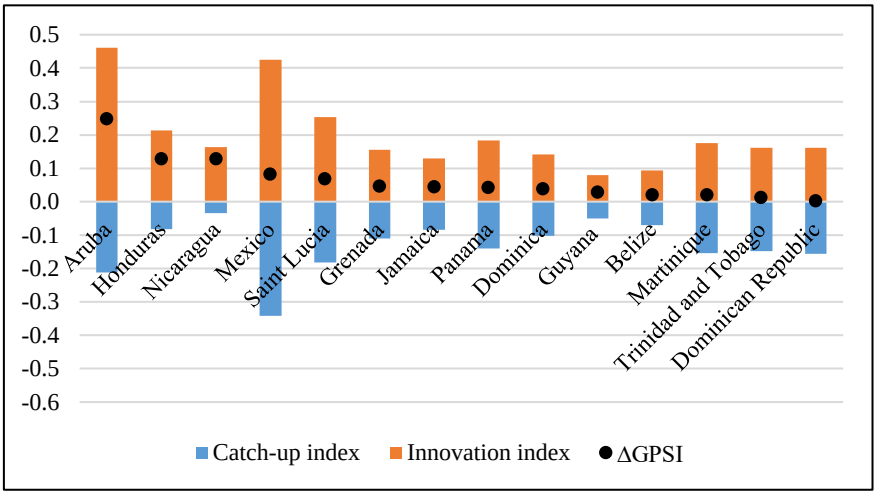
The catch-up index uses the aspiration levels of 2007 to measure changes in the values of the initial indicators between 2015 and 2007 $\left(\Delta GPSI_i^{2007[u2007]:2015[u2007]}\right)$, while the innovation

index evaluates the values of the initial indicators for 2015 by measuring the changes in the aspiration levels $\left(\Delta GPSI^{2015[u2007]:2015[u2015]}\right)$. According to the values of "Decomposition 2" the Catch-up index $\left(\Delta NGPI_i^{t_1[u_1];t_2[u_1]}\right)$ is negative for all the destinations, except for Venezuela, which attained a zero value. As a result, it is possible to affirm that no destination improves its competitiveness level because of an improvement in its indicator values in the period, compared to the aspiration levels from 2007. On the other hand, the innovation index $\left(\Delta NGPI_i^{t_2[u_1];t_2[u_2]}\right)$ is positive for 28 destinations, which means that for almost all of the destinations in the region, the progress of their competitiveness in the period was caused by the modification of the aspiration levels. This mainly affected nine indicators for which the aspiration levels were less restrictive in 2015 than in 2007: the negative indicators 8.01 "CO_2 Emissions", 8.02 "% of Threatened species", 8.03 "Ratio tourists/Local Population", and six more positive indicators.

The following figure (Figure 13) demonstrates the decomposition of the dynamic index for the best destinations and includes those with positive values for the $\Delta GPSI$ index. For all of these destinations the innovation indices are positive and, in absolute terms, higher than the catch-up indices. Aruba registered the highest score across the period, the highest innovation index (i.e., it was the most improved value due to the changes in the aspiration levels), and the greatest difference between its catch-up and the innovation index. Honduras ranks second and Mexico ranks fourth. As can be observed, Mexico's innovation index is twice as high as that of Honduras; that is, Mexico's improvement due to the changes in the aspiration levels is double that of Honduras. However, the catch-up index of Mexico is four times smaller than that of Honduras. As a consequence, Mexico was more affected than Honduras due to the value of the indicators in 2015 compared to the aspiration levels from 2007. The same conclusion is valid for Guyana and Belize when compared to the Dominican Republic, which is one of the most visited destinations of the islands in the region.

The remaining 17 destinations attained negative values for the dynamic index. Their decomposition is shown in Figure 14. As discussed previously, the GPSI value for Bermuda declined more than any of the other destinations from 2007 to 2015 (Table 30). Its decline in competitiveness was mostly due to the bad behaviour in the values of its indicators in 2015 more than for external influences, which also affects this destination negatively. Bermuda also attained the greatest effect on this sub-index, of all the destinations.

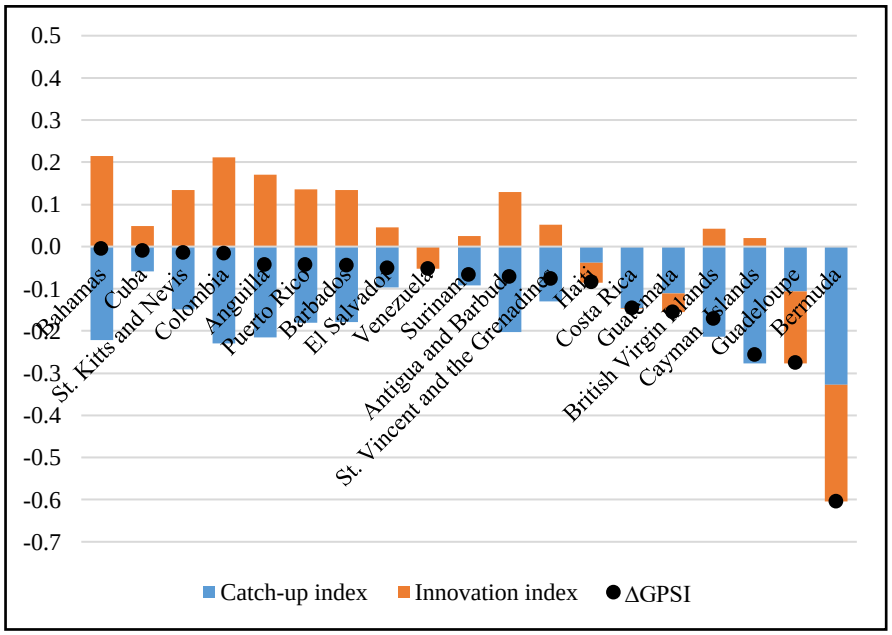
Figure 13. Decomposition of the ΔNGPI for countries with positive values



Source: Author's own.

Venezuela is the only one destination from this group that remained unaffected by the catch-up index (i.e., its indicators values improved in the period); however, a small and negative value for the innovation index impacts negatively on its global score.

Figure 14. Decomposition of the ΔNGPI for countries with negative values



Source: Author's own.

Moreover, a comparison could be made between the ranking of the $GPSI^{2015}$ (static measure: at the end of the period) and the ranking derived from the dynamic indicator $\Delta GPSI$. A detailed inspection of the rankings in Table 32 leads us to state that there are major differences between the competitiveness positions. An average variation of 11.21 units tested this affirmation. Cuba,

the Dominican Republic, Puerto Rico, and Saint Vincent and the Grenadines were the most stable and varied by only two positions.

Table 32. Ranking of the Dynamic synthetic indicator and the Static GPSI for 2015

Destinations	Rank $\Delta GPSI$	Rank $GPSI^{2015}$
Anguilla	19	5
Antigua and Barbuda	25	6
Aruba	1	4
Bahamas	15	9
Barbados	21	10
Belize	11	19
Bermuda	33	11
British Virgin Islands	30	3
Cayman Islands	31	2
Colombia	18	7
Costa Rica	28	15
Cuba	16	18
Dominica	9	17
Dominican Republic	14	16
El Salvador	22	29
Grenada	6	20
Guadeloupe	32	24
Guatemala	29	26
Guyana	10	31
Haiti	27	33
Honduras	2	23
Jamaica	7	25
Martinique	12	21
Mexico	4	1
Nicaragua	3	27
Panama	8	14
Puerto Rico	20	22
Saint Lucia	5	12
St. Kitts and Nevis	17	8
St. Vincent and the Grenadines	26	28
Suriname	24	30
Trinidad and Tobago	13	32
Venezuela	23	13

Source: Author's own.

The most variable destination was the Cayman Islands, with the second most competitive value in the static measure, which attained the 31st position (of 33) with the dynamic indicator. This destination was one of the most strongly affected by its own variable scores in 2015 with respect to the aspiration levels in 2007. A total of 19 destinations improved their values with the

dynamic index with respect to the static index. The most remarkable improvement was that of Nicaragua (27th with the GPSI 2015 and 3rd with $\Delta GPSI$). The 21-position improvements for Guyana and Honduras with the dynamic index were also of note.

3.2.4 Conclusions on Dynamic Goal Programming Synthetic Index

As has been demonstrated, the dynamic Goal Programming Synthetic Index enables the competitiveness of a given destination to be analysed over time in such a way in which it is possible to evaluate its performance across a time span. This is consistent with the affirmation that a higher-than-average rate for the indicators analysed could be considered a gain in competitiveness (Dupeyras & MacCallum, 2013; de la Peña et al., 2019). The information obtained enables the evaluation of the extent to which destinations move closer to or further away from their competitiveness goals at different points of time, thereby filling the gap in previous studies that used either common references for all the units (Blancas et al., 2016) or multiple benchmarks (Blancas et al., 2018).

Unlike other dynamic synthetic indicators, which use absolute measures, this approach is composed of two components, referred to as catch-up and innovation components. The decomposition of the index helps researchers and decision-makers to access information regarding the causes of the improvement or the decline of the competitiveness level of each destination. The proposal allows us to ascertain whether the competitiveness values are due to improvement or decline, either caused by a destination's internal performance or affected by external issues, in other words, whether they were due to changes relative to a destination's own deviation variables or due to changes in the newly defined aspiration levels, respectively. This is the most feasible approach because the competitiveness is evaluated across time and not just at a given moment. As a result, the presented method facilitates the analysis into whether the decisions taken during a period have influenced the competitiveness of a destination positively or negatively. This is a most desirable approach for the evaluation of the quality and effectiveness of a destination's management.

Additionally, a comparison could be made between the static ranking and the dynamic index in order to ascertain whether the most (or least) competitiveness destinations at the end of the period were those with the best (or worst) behaviour throughout the period and, moreover, whether this was due to internal or external factors. Further research should include all the values contained in the same time span such that the competitiveness of a given destination would be affected by the initial and the final value, but also by intermediate values of each

indicator. To this end, a new way of analysing TDC is presented in the following section. This approach enables the competitiveness of a destination to be observed in a given time span through the average rate by which the values of the indicators improve or decrease with respect to itself and to its competitors over time.

3.3 Tourism competitiveness through destinations' performance

This study aims to analyse the performance of tourist destinations towards better competitive position during a time span. The proposal involves observing a destination's performance with respect to its competitors (Cracolici & Nijkamp, 2008; WEF, 2017; Goffi & Cucculelli, 2018), and also with respect to itself (Dwyer et al., 2016; Drakulić Kovačević et al., 2018). To this end, it is proposed to use the slope of the regression equation for each indicator of each destination. This enables the average performance of a destination to be identified within a time span. As a result, competitiveness can be analysed as a dynamic and not as a static approach.

The application allows the inclusion of all information available in each indicator, in such a way that a destination's performance is not only affected by the initial and final values, but also by all the intermediate values from the time span. Furthermore, Cluster Analysis is proposed to group destinations according to their performance level in the indicators studied. The data used for the study corresponds to the variables registered by the World Travel & Tourism Council (WTTC) for all destinations. It comprises 11 indicators representative of their tourism industry.

The proposed methodology is based on linear regression equations. These are both easy to obtain and comprehensible. Furthermore, linear regression is available in most statistical software and considers all values for every indicator in each year included; hence no information is lost. The value obtained considers all the data. Outcomes are affected positively or negatively for good or bad indicator values respectively, which is a desirable characteristic in measurement processes. The results are realistic and represent the average rate at which a given destination improves or declines in a specific indicator over the period considered. As a result, competitiveness is viewed as a dynamic process since the scores are single values that are representative of a destination's performance during a period.

The number of destinations and their sizes pose no problems for the proposal. First, all those destinations considered as competitors may be included. The scores enable them to be ranked according to their own behaviour in each indicator. Along the same lines, the sizes cause no issue since the measurement process demonstrates the destination's behaviour in each indicator with respect to itself in a time span. The mainstream TDC studies assume that one destination

is more competitive than another if it obtains a better value for most of the indicators measured, which is a real assumption. This proposal also implies that a given destination could be considered more competitive if it is able to improve its indicators' values with respect to itself more than do other destinations over time.

3.3.1 Methodology

3.3.1.1 Data

Several investigations analyse TDC in a time span with a few indicators (usually no more than five) (Craigwell, 2007; Croes, 2011; Jackman et al., 2011; Croes & Kubickova, 2013; de la Peña et al., 2019). However, this study involves indicators used by the WTTC to evaluate the result of the tourist activity at each destination through the contribution of tourism to GDP, plus the Direct Spending Impacts and the Indirect and Induced Impacts (WTTC, 2011). In addition to these indicators, there is the difficulty of obtaining reliable values for the indicators in developing countries, as is recognized in the literature.

Information was available for all destinations, from the list of 33 countries in the study. The indicators selected correspond to hard data. This allows for a greater number of destinations in the study. Soft data was not included, firstly because its use is more related to the analysis of a single destination, and secondly, due to the inexistence of people with partial or absolute knowledge of tourist issues for all the destinations considered. The indicators used in the study are listed below. Their values are calculated by the WTTC and presented in their reports in terms of the current money of each destination, US$ billion and as a percentage.

1. (GDP_DC) Travel & Tourism Direct Contribution to Gross Domestic Product: GDP generated by industries that deal directly with tourists, including hotels, travel agents, airlines and other passenger transportation services, as well as the activities of restaurant and leisure industries that deal directly with tourists.
2. (GDP_TC) Travel & Tourism Total Contribution to Gross Domestic Product: GDP generated by direct Travel & Tourism industries plus the indirect and induced contributions, including the contribution of capital investment spending.
3. (E_DC) Travel & Tourism Direct Contribution to Employment: The number of direct jobs within the Travel & Tourism industries. This includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists.

4. (E_TC) Travel & Tourism Total Contribution to Employment: The number of jobs generated directly in the Travel & Tourism industry plus the indirect and induced contributions.
5. (DTTS) Domestic Travel & Tourism Spending: Spending within a country by that country's residents for both business and leisure trips. Multi-use consumer durables are not included since they are not purchased solely for tourism purposes.
6. (LTTS) Leisure Travel & Tourism Spending: Spending on leisure travel within a country by residents and international visitors.
7. (BTTS) Business Travel & Tourism Spending: Spending on business travel within a country by residents and international visitors.
8. (VE) Visitor Exports: Spending within the country by international tourists for both business and leisure trips, including transportation spending.
9. (ITTC) Internal Travel & Tourism Consumption: Total revenue generated within a country by industries that deal directly with tourists including visitor exports, domestic spending and government individual spending. This does not include spending abroad by residents.
10. (GI) Government Individual Travel & Tourism Spending: Government spending on individual non-market services for which beneficiaries can be separately identified. These social transfers are directly comparable to consumer spending and, in certain cases, may represent the public provision of consumer services. For example, this includes the provision of national parks and museums.
11. (CI) Capital Investment: Capital investment spending by all sectors directly involved in the Travel & Tourism industry. This also constitutes investment spending by other industries on specific tourism assets, such as new visitor accommodation, passenger transportation equipment, as well as restaurants and leisure facilities for specific tourism use.

As is expressed by the WTTC in each country's Economy Impact, the percentage of the total refers to each indicator's share of the relevant whole economy indicator such as the GDP for indicators 1, 2, 5, 6, 7, and 9. For indicators 3 and 4, the percentage is with respect to the whole economy's employment. The percentage of Visitor Exports (8) is relative to the total exports of goods and services. Government Individual Travel & Tourism Spending (10) is relative to the total tourism expenditure. Finally, Capital Investment (11) is relative to the whole economy's investment. These values are available in the WTTC DATA GATEWAY[1] and in each country

[1] https://www.wttc.org/economic-impact/country-analysis/data-gateway/

report. The percentage was used in the study to prevent differences arising in the scale of the data.

The fact that not all the indicators are evaluated with respect to the destinations' GDP is a desirable characteristic. This prevents an increase in the contribution of tourism to the GDP of any indicator being caused by the decline of other activities instead of being due to a greater development of a tourist destination. This undesirable behaviour can arise since the lower the starting level of a country in a given indicator, the more progressive its increase.

Annex IV presents the mean and standard deviation for each country in each indicator. The highest means from among the indicators for all the destinations are concentrated in Visitor Exports for 27 of the 33 destinations. The highest of the sample corresponds to Anguilla in this indicator, with an average of 81.307 relative to the total exports of goods and services. The ten remaining highest means are distributed in 5 for E_TC (Aruba, Bermuda, the British Virgin Islands, Guyana and Mexico), 2 for GDP_TC (Honduras and Venezuela) and CI (Puerto Rico and Trinidad and Tobago) and 1 for GI (the Cayman Islands).

The highest stability is for GI, with the lowest values for 24 destinations; this is the lowest value for Standard deviation. It demonstrates how well-balanced the governmental efforts in favour of tourism development in the region are. The remaining nine most stable values are: 8 for BTTS and 1 for DTTS (Barbados). The most stable destination for GI is Colombia. The British Virgin Islands comprise six indicators with the highest average for the whole the period (GDP_DC, GDP_TC, E_DC, E_TC, ITTC and LTTS), while Suriname achieves the lowest average mean for eight indicators: the six previous plus DTTC and LTTS. What is more, with respect to stability (SD), the destination with the most invariable indicators is Colombia, which achieves the lowest standard deviation for GDP_DC, GDP_TC, E_DC, E_TC, GI, and ITTC.

3.3.1.2 Linear Regression Model

The proposed approach to evaluate TDC is Linear Regression Modelling. This has been used previously in tourism studies for forecasting tourism demand (Cankurt & Subasi, 2016). It involves estimating the linear regression equation of each indicator for each destination. The indicators are the dependent variables, measured in percentages, while the independent variable is the time (in years). All the dependent variables are expressed on a 0-100 scale, thereby obviating the need for a normalization process. The intercept represents the indicators' average value at time zero; that is, at the beginning of the period. The slopes of linear regression equations represent the annual performance mean rate of each indicator in the period with

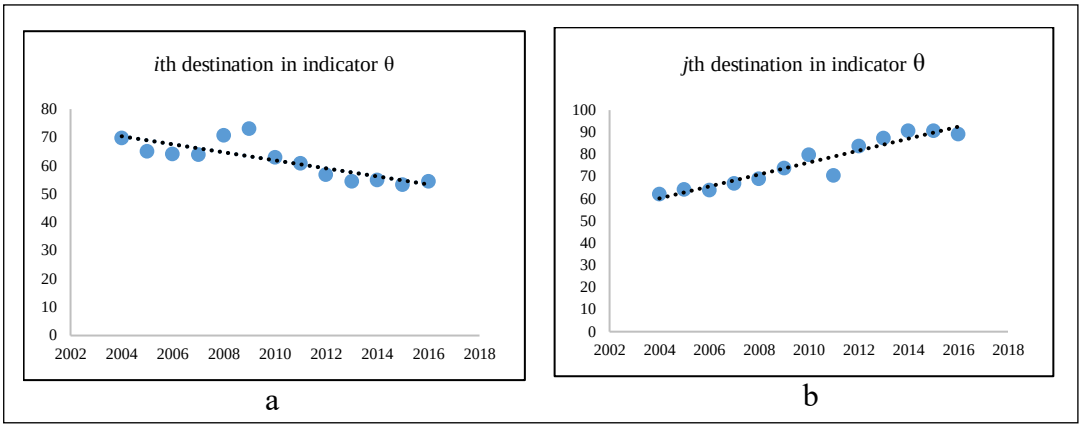
respect to the reference economic value, as is stated in the explanation of each indicator. The use of these values as initial information enables the researchers to study the destination's behaviour in a period without the need to repeat the calculus for each year. It is possible to compare destinations considering their self-performance in each indicator over time. Furthermore, slope values enable destinations to be compared according to their average growth rate thanks to their unit invariance.

This method has been proposed due to its inclusion of the possibility of analysing a destination's behaviour taking into consideration all the values of each indicator in the period. That is why all the available information can be considered. A variation rate between two periods (initial and final) could be used but this would only consider the initial and final values, and would disregard the effect of the intermediate values within the time span. The approach enables the behaviour of a destination to be observed by means of a single value for each indicator in a given time span. This is another way to observe a destination's competitiveness. A destination may improve its competitiveness level over time if it achieves a growth rate in the values of its indicators.

The main objective is not to forecast, but instead to observe the average performance of the destinations in each indicator. This is the main advantage of the procedure applied herein with respect to the other methods. Moreover, the slope is used as a unique measurement unit for all the destinations to determine groups with a similar growth rate in their indicators. The use of other methods could provide better fits but, in certain cases, this would differ for each relationship. The use of different methods may cause an incomparability between destinations. A negative value for the slope for the *i*th indicator of the *j*th destination indicates a negative linear association. This means that the indicator's value decreases over time at a rate equivalent to the slope (Figure 15, a). Otherwise, a positive score demonstrates an annual improvement ratio equivalent to the slope (Figure 15, b). Also, other issues do exist, such as the absence of association and/or other strong relations different from linear.

For two given destinations (*i* and *k*), a certain indicator θ can be evaluated. If $\beta_{0i} > \beta_{0k}$, then this denotes that destination *i* has a higher initial expected value than destination *k* at time 0 (that is, in the initial year). If for the whole period, $\beta_{1k} > \beta_{1i}$, this indicates that destination *k* has a better average growth rate than destination *i*. As a result, if both destinations maintain the same slope (β_1), then destination *k* is going to achieve a higher value than destination *i* for the indicator and $\theta_k > \theta_i$ as the variable *x* increases, which means as time goes by.

Figure 15. Negative and positive linear regression



Source: Author's own.

3.3.1.3 Cluster Analysis

The use of cluster analysis is proposed in order to view how destinations cluster according to their behaviour in the period and to identify common patterns. This approach has been used in tourism studies due to its ease in identifying a group of units with similar characteristics according to the phenomena measured (Gooroochurn & Sugiyarto, 2005; Del Chiappa et al., 2018a; Del Chiappa et al., 2018b). A hierarchical cluster analysis with Ward's method criterion was applied. This method was used for its ability to minimize differences within clusters and prevent problems from being generated by the chain. All the variables therein intervene to determine the distance between clusters. Furthermore, the sum of squares within the cluster is minimized in each step of the clustering process. (Hair et al., 1999). The squared Euclidean distance was used as a measurement, as is suggested in the specialized bibliography when Ward's method is used (Hair et al., 1999).

A hierarchical method was applied since non-hierarchical procedures entail several disadvantages. Firstly, they require that, in principle, the number of groupings must be inferred, which is an undesirable aspect, since the study wishes to investigate the groups that are formed from the average annual rate of each destination in each indicator. Secondly, the choice of the grouping seed highly influences the procedure. Furthermore, if seeds are chosen by the statistical package, then their choice depends on the computer's reading order. In this way, it is possible to obtain different outputs with similar data sets. Lastly, the procedure is frequently unfeasible from the calculation point of view because there are too many possible choices, not only due to the number of groups but also because of the location of the seed (Johnson, 1998). It is common to find applications in which the arithmetic mean or the median is employed to

compare clusters with variables with repeated measures over time. However, the slope is considered as a better option for the measure of the average behaviour in data with a tendency.

3.3.2 Results and Discussion

Perhaps not all destinations follow a linear trend in each indicator because of tourist flows. However, due to the necessity of establishing a comparison, it is not possible to use the model that best matches the behaviour of each destination in each separate indicator, but in the one that is applicable to all the model and which facilitates an explanation of the results. With this aim, linear regression could be considered one of most certain approaches due to its characteristics. The results are presented in Table 33, where the slope of the regression equations of each indicator for each destination are shown.

The indicators, valued in percentages, were employed to prevent differences in scale and to eliminate variable transformation. If data transformation had been necessary, then it would have affected the explanatory power of the score used. Furthermore, the remaining scales in which the data was offered in the WTTC (e.g., local currency and US$ millions in Nominal and Real prices) do not contribute to the destination's differentiation, due to value similarity caused by data approximation. An analysis of the extreme scores shows that the highest values for all the indicators appear in only five destinations. These countries achieved the highest annual increase of all the issues analysed in the period.

Aruba attains the best achievement in four indicators: The two related to employment, (E_DC) and (E_TC), tourism spending within the country (VE), and the total contribution to GDP (GDP_TC). The next best achievement is by the British Virgin Islands, which has the best slope for three indicators (GDP_DC, LTTS and ITTC). Antigua and Barbuda follow with the highest performance in Capital Investment in tourism (CI) and the best increment in Domestic Travel & Tourism Spending (DTTS). The last to attain the best score in an indicator include Guyana, with the best governmental yearly tourism support (Government Individual Travel & Tourism Spending), and Saint Lucia, with the best improvement in business trips in the region (BTTS).

Table 33. Slopes of Destinations

Destinations	GDP_DC	GDP_TC	EDC	ETC	DTTS	LTTS	BTTS	VE	ITTC	GI	CI	Rank
Anguilla	0.386	1.181	-0.149	-0.13	0.036	0.433	-0.054	0.296	0.781	0.041	0.604	5
Antigua & Barbuda	-0.194	-0.303	-0.414	-1.418	0.203	-0.204	0.01	-0.482	-0.086	0.104	1.587	26
Aruba	0.916	2.993	0.959	2.698	0.181	0.843	0.066	4.989	0.882	0.087	0.499	1
Bahamas	0.181	0.319	-0.182	-0.251	0.025	0.173	0.0003	0.615	0.019	0.043	0.477	12
Barbados	0.147	-0.256	-0.203	-0.644	0.019	-0.077	0.016	0.183	-0.116	0.058	0.617	21
Belize	-0.061	0.533	0.142	0.511	0.039	0.12	0.026	0.143	0.082	0.049	1.047	7
Bermuda	-0.081	-0.009	-0.132	-0.078	0.118	-0.067	-0.014	-0.599	0.023	0.024	0.304	22
British Virgin Islands	1.048	2.8	-0.212	-0.182	0.07	1.013	0.035	1.933	1.335	0.109	0.533	2
Cayman Islands	0.113	0.469	0.132	0.434	0.058	0.089	0.023	0.076	0.096	0.114	1.02	8
Colombia	0.03	-0.067	0.007	-0.048	-0.007	0.011	-0.008	0.406	0.019	0.002	-0.22	18
Costa Rica	-0.174	-0.339	-0.113	-0.26	-0.017	-0.117	-0.059	-0.117	-0.125	0.019	-0.175	29
Cuba	-0.11	-0.276	-0.089	-0.232	-0.04	-0.106	0.009	-1.105	-0.192	0.019	0.903	27
Dominican Republic	-0.09	-0.227	-0.124	-0.288	0.022	-0.094	0.003	0.057	-0.088	0.12	0.073	3
Dominica	0.3	0.922	0.256	0.787	-0.027	0.232	0.066	0.944	0.421	0.02	0.799	23
El Salvador	0.091	0.231	0.085	0.213	0.139	0.035	0.056	0.21	0.143	0.01	0.243	11
Grenada	0.022	0.211	0.033	0.224	-0.036	-0.007	0.027	-0.047	0.042	0.032	0.961	10
Guadeloupe	0.048	0.047	0.121	0.161	0.032	0.042	0.002	-0.996	0.132	0.031	-0.456	24
Guatemala	-0.029	0.012	-0.012	0.038	-0.04	-0.011	-0.02	-0.091	-0.036	0.017	0.532	15
Guyana	-0.001	-0.169	0.001	-0.174	0.032	0.027	-0.028	0.029	0.024	0.147	-0.85	25
Haiti	0.153	0.453	0.108	0.343	-0.063	0.137	0.017	1.689	0.225	0.003	0.328	6
Honduras	-0.023	-0.012	-0.02	-0.013	0.086	-0.005	-0.018	-0.227	-0.005	0.015	0.311	19
Jamaica	-0.007	0.129	-0.016	0.087	0.072	-0.066	0.059	1.153	0.113	0.048	0.53	9
Martinique	0.073	0.256	0.083	0.263	0.008	0.076	-0.006	0.286	0.078	0.022	0.127	13
Mexico	-0.001	0.046	-0.115	-0.166	0.011	0.041	-0.043	-0.108	-0.04	0.004	0.136	20
Nicaragua	0.092	0.239	-0.06	0.012	0.045	0.063	0.029	-0.375	0.045	0.007	0.248	17
Panama	0.276	0.668	0.382	0.807	-0.038	0.299	-0.023	1.19	0.299	0.018	-0.183	4

Puerto Rico	0.029	0.108	-0.005	0.042	-0.004	0.027	0.002	-2.686	0.062	0.02	1.055	28
St. Kitts and Nevis	-0.359	-0.816	-0.342	-0.763	-0.013	-0.396	0.033	-1.252	-0.602	0.046	0.636	33
St. Lucia	-0.304	-0.876	0.153	-0.413	0.09	-0.393	0.086	-1.252	-0.251	0.032	0.037	32
St. Vincent and the Grenadines	-0.292	-0.742	-0.253	-0.66	-0.091	-0.229	-0.065	-0.107	-0.409	0.032	0.663	31
Suriname	-0.152	-0.418	-0.185	-0.475	-0.083	-0.089	-0.063	-0.269	-0.144	0.006	-0.177	30
Trinidad and Tobago	0.013	0.102	0.008	0.192	0.143	0.014	-0.0003	0.006	0.088	-0.01	-0.04	14
Venezuela	-0.005	0.04	-0.026	-0.037	0.016	0.017	-0.022	0.179	-0.014	0.012	0.195	16

Source: Author's own.

All the worst behaviours are negative and are distributed among seven destinations. Saint Kitts and Nevis has the steepest decline in three aspects: GDP_DC, ITTC, and LTS. Saint Vincent and the Grenadines has the worst performance in BTTS and DTTS. Antigua and Barbuda are the worst in the aspects related to employment in E_DC and E_TC. The others are Guyana, which is the worst in CI, Puerto Rico (worst in VE), and Saint Lucia (worst in GDP_TC). Moreover, Trinidad and Tobago achieved the worst performance in GI, with the only negative value for this indicator from among all the countries.

A detailed inspection reveals only three destinations which have improved in all the indicators for the period: Aruba, the Cayman Islands, and El Salvador. Despite the behaviour of these destinations in all the indicators considered, there exist other destinations with values higher than those in their indicators. This means that these destinations have augmented their scores at a higher rate than the others across the period. Consequently, in comparison to the others, they have achieved a better competitiveness position with respect to each other. As a result, a positive performance in all the indicators is insufficient; a higher value is also necessary for it to be considered the most competitive. Belize, Dominica, and Martinique have an increased level in all indicators except one, which has negative behaviour: GDP_DC, DTTS, and BTTS, respectively.

From the indicators' point of view, it is possible to notice the importance given to tourism in all the countries in the area. A general local government concern regarding the development and maintenance of non-market services for which beneficiaries can be local, is evident due to the 32 positive values out of a possible 33 for slopes of Governmental Individual Travel & Tourism Spending. Only Trinidad and Tobago obtained a negative value, very close to zero. In a direct relationship to that explanation above, a common regional interest is observed in the development of travel and tourism services. This is justified by the 26 countries of the sample with positive values for their slopes in Capital Investment and provides evidence of the importance given to this economic activity in the area. This is consistent with the relative best position of the region in this matter (WTTC, 2018b).

In contrast, despite the positive behaviour in GI and CI in the region, and the presence of more average yearly growth than decline, the most widespread local difficulties are related to the capacity to create jobs in the tourism industry. The direct and total contribution to employment shows a decreasing behaviour in 19 and 18 of the 33 economies, respectively. This should be a general concern for these countries whose aim it is to improve the local population`s living conditions. In spite of this almost generalized negative performance, this was the region for

which the Travel and Tourism industry contributed most to the total employment in 2017 (in relative terms), according to the WTTC (2018a). Furthermore, in agreement with the WTTC's forecast, this area is expected to achieve the highest relative growth in this indicator for 2028 (WTTC, 2018b).

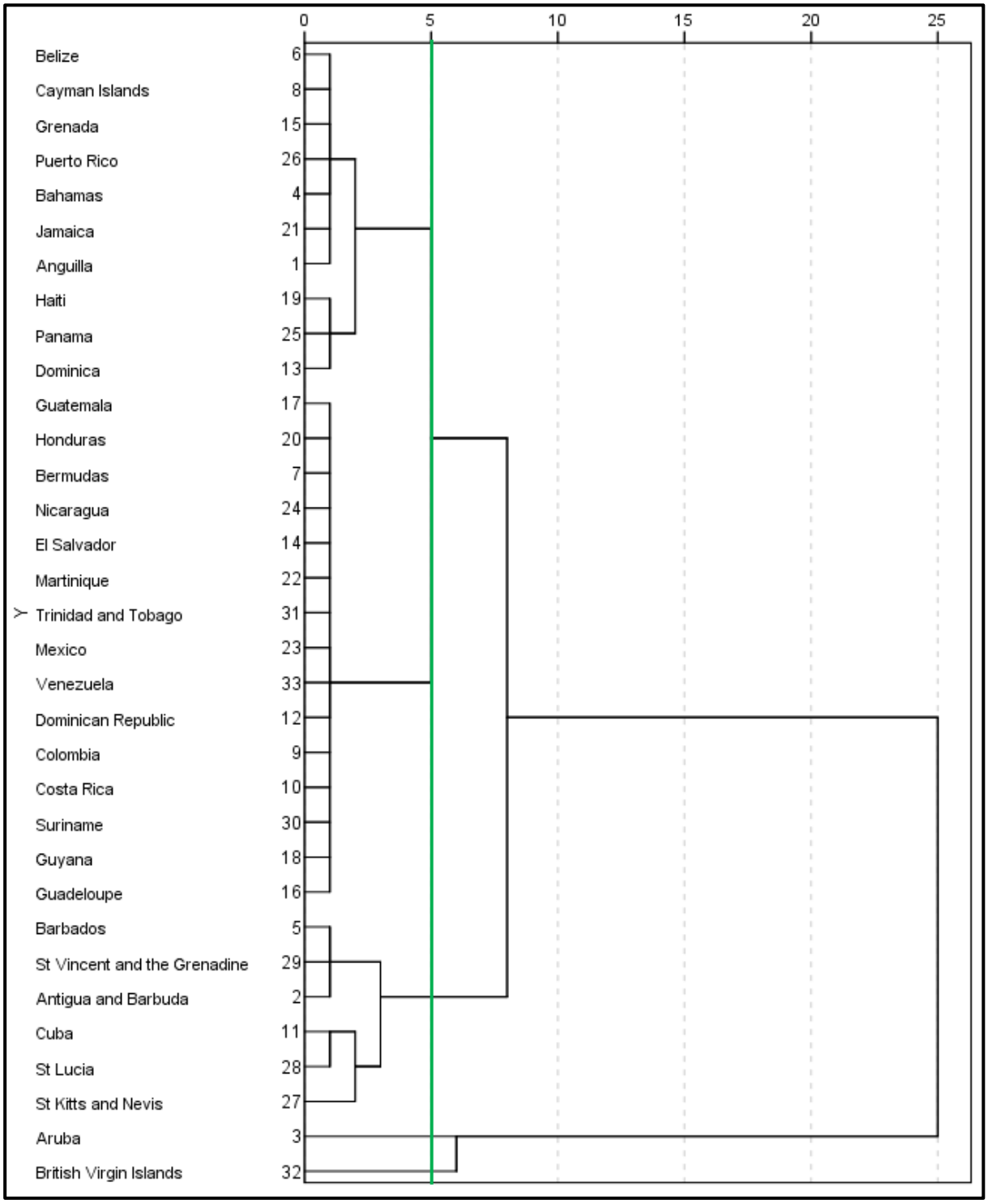
An analysis between islands and continental states can also be made. These two groups have similar performances in GI and CI, consistent with the regional interest in supporting tourist services and products in favour of tourism development. Additionally, for most countries of both groups, 61.9% of island states and 58.33% of continental states, the total contribution of tourism to GDP (GDP_TC) has undergone annual growth in the period. This is more intense for island states. This issue situates these economies in a more tourism-dependent condition, while continental countries have sources, other than tourism, for support of their economic development. The greater difference between these groups is due to the yearly increment in spending on business trips for 76.2% of islands versus 25% of continental states. Moreover, island states (90.4%) have a year average growth higher than that of the continental states (58.3%) in the investment in new visitor accommodation, passenger transportation equipment, and restaurants and leisure facilities for specific tourism use (90.4% vs. 58.3%).

Mexico could be viewed as the most competitive destination of the sample. It is included among the top ten destinations worldwide for almost all the indicators measured, except for VE, BTTS, and CI. This is consistent with this country’s size and its major recognized tourist offer, which places it within the best destinations according to the WTTC every year. However, this proposal observes how much a destination has been able to improve the topics analysed with respect to itself over a period. As a result, Aruba has achieved an annual growth higher than that of Mexico in all its indicators in the period 2004-2016. The results of cluster analysis enables similarities to be sought in TDC performance in the region’s destinations.

3.3.2.1 Results for Cluster Analysis

Cluster Analysis clearly identified five groups. The number of groups was decided starting from the dendrogram information (Figure 16) and the result of the F tests, which revealed major differences between groups, as did the Kruskal-Wallis test. Additionally, the researchers' criteria explain group characteristics. The first two are each formed of a single destination: cluster 1, Aruba; cluster 2, the British Virgin Islands. The remaining three clusters contain 6, 10, and 15 destinations, respectively. These appear in Figure 17, from C1 (first cluster) to C5 (fifth cluster).

Figure 16. Dendrogram



Source: Author's own.

Figure 17. Clusters

Source: Author's own.

The Kruskal-Wallis test demonstrates that 7 of the 11 variables considered cause significant differences between groups (Table 34). Four variables do not contribute to the group's differentiation. Government Travel & Tourism Spending (GI) and Capital Investment (CI) are indicators for which most countries of the region achieved positive behaviour in the period. The other two variables are Business Travel & Tourism Spending (BTTS) and Domestic Travel & Tourism Spending (DTTS). Most of the countries of the region do not achieve good marks either in absolute or relative terms for these matters. The region is located in one of the last positions worldwide for these two items according to the WTTC (2018b). The Kruskal-Wallis test results and the WTTC outputs were consistent.

Table 34. Kruskal Wallis Test

Test Statistics[a,b]											
	BTS	CI	DS	E_DC	E_TC	GDP_DC	GDP_TC	GI	ITTC	LTS	VE
Chi-Square	9.38	16.08	4.26	11.97	19.06	22.24	24.42	9.201	21.56	21.23	18.21
df	5	5	5	5	5	5	5	5	5	5	5
AsympSig.	.095	.007	.513	.035	.002	.000	.000	.101	.001	.001	.003

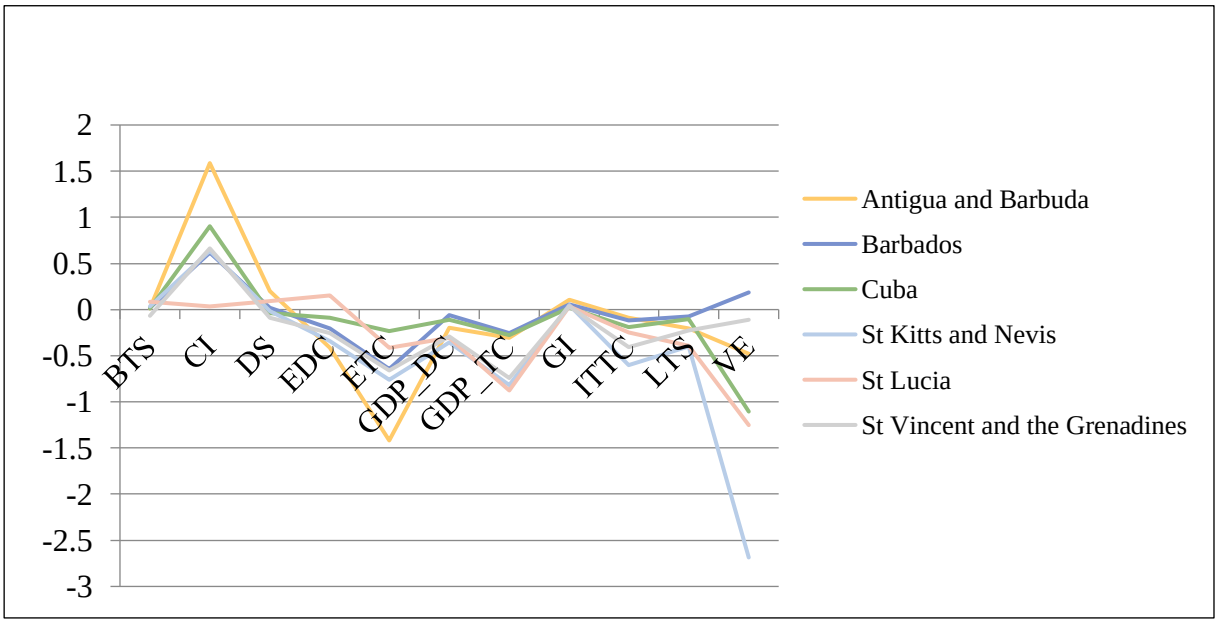
a. Kruskal Wallis Test
b. Grouping Variable: Number of initial cases

Source: Author's own.

The first two clusters, each formed of a single destination (Aruba and the British Virgin Islands), correspond to those which achieved the best performance in seven of the eight indicators that contribute significant differences among groups. These two countries are located among the top ten destinations worldwide with the best achievement levels in GDP_DC, GDP_TC, E_DC, E_TC, VE, LTTS, and CI in 2016.

Figures 18, 19 and 20 demonstrate the behaviour of the slopes for each destination in each indicator in the period. The third cluster comprises six island states (Figure 18). Except for Barbados and Cuba, the remaining destinations are those with the worst performance in eight indicators. In general, all these countries have a yearly decreasing ratio in the E_TC, GDP_TC, ITTS and LTTS. These variables are all significant in showing differences between groups. The influence of tourism on their economic development has a descending score (GDP_TC). Another two negative aspects are the ITTC and LTTS, also with negative values. Only the CI and GI are the issues for which these destinations achieved a great performance, both with an average higher than the sample mean. This indicates that the effort made by governments and individuals in favour of tourism development on its own remains insufficient to be completely competitive.

Figure 18. Slopes for the 3rd cluster



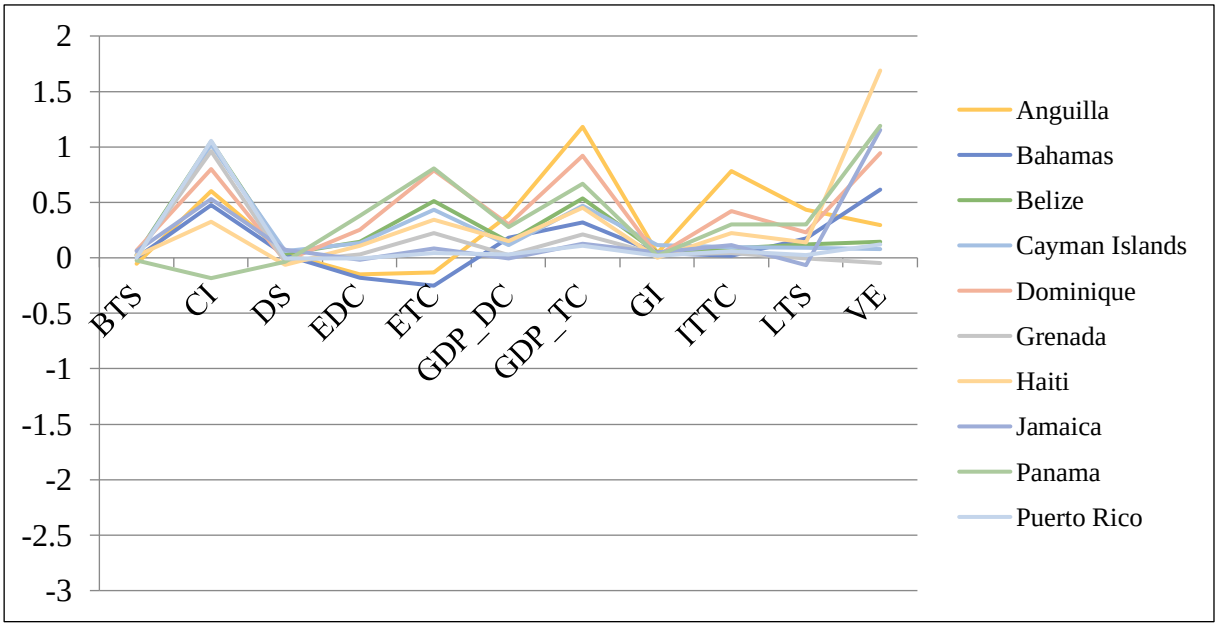
Source: Author's own.

As can be observed in Figure 18, these countries have more negative than positive scores. The best positive performances, or the highest positive value for each country, are grouped in the indicator CI; five destinations achieved the best performance registered among all the indicators considered, except Saint Lucia. In contrast, the worst behaviours are centred in VE, which is

comprised of Cuba, Saint Kitts and Nevis and Saint Lucia, followed by E_TC with two destinations (Antigua and Barbuda and Cuba) and GDP_TC, where Saint Vincent achieved the worst value. In general, for this group of destinations the best performance is located in a single variable that denotes the involvement of all sectors and industries in the prioritization of travel and tourism and the creation of new services and specific tourist assets. However, these destinations have to seek new initiatives and services that increase the time visitors spend in the countries.

The fourth cluster is comprised of 10 countries (Figure 19), 8 of which are island states, plus Belize and Panama. They all seem to be more tourism dependent than the previous cluster, and have a positive value for the slopes of GDP_TC. Additionally, these countries also have an increment of the yearly coefficient for the ITTC, which means there are local revenues generated for the industries in these countries due to the tourism activity. For the GDP_TC and ITTC, the group average is higher than that of the region. This implies a very good behaviour in these two aspects. For topics such as BTTS, CI, LTTS, and VE, these destinations achieved positive performance values except for one or two countries. This demonstrates good performance throughout the period. This cluster can be associated with general good tourism development.

Figure 19. Slopes for the 4th cluster



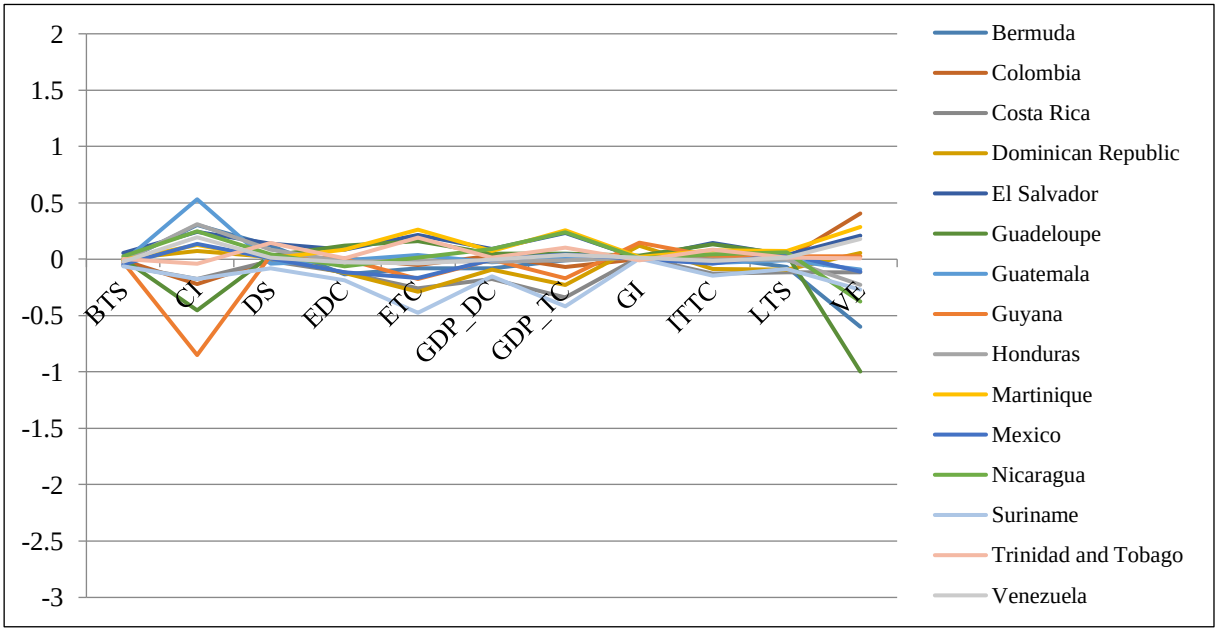
Source: Author's own.

The variables that contain the highest values for this group are VE, in five destinations, and CI, in four. This is representative of a great achievement in tourist spending in destinations. The worst values are distributed among seven indicators, which means that there is no single

indicator with the worst general performance. Only three indicators do not have extreme values for the destinations of this cluster: E_TC, ITTC and LTTS.

The fifth cluster is the largest, with 15 countries (Figure 20), from which the majority are continental destinations. There are only five island states. This cluster apparently does not have as homogeneous a behaviour as do the other clusters, where the changes in the variables are in the same direction. For the third and fourth clusters (Figures 18 and 19), most of the slopes are below or above zero, respectively. However, a detailed inspection of Figure 20 reveals that 96% of the slopes remain between -0.4 and 0.4 and 94% are between -0.3 and 0.3, despite the seemingly erratic behaviours. On a more reduced scale, these values would be observed around zero.

Figure 20. Slopes for the 5th cluster



Source: Author's own.

Considering indicators that represent differences of significance, for those that provide information regarding job creation and its direct contribution to GDP, nine destinations have a negative performance and six a positive performance. In the remaining three variables (GDP_TC, ITTC and LTTS), most of the destinations have achieved a good performance. For GDP_TC and ITTC, this cluster has 8 positive and 7 negative destination performances, while there are 9 positive and 6 negative destination performances for LTTS. The average performance for the countries of the cluster is lower than that for the region. These countries have an average score higher than the mean of the sample only for the DTTS. This cluster has a behaviour similar to the third cluster. Seven destinations (46.66%) have their best performance in CI, and the VE contains the highest number of countries with the worst

behaviour, with 33.33% of the group (5 destinations). The best and the worst performances are distributed across six variables.

A global index was created by various approaches in order to obtain a ranking. First, indicators for which destinations achieved positive slopes were counted (PositSlope). For those that do not have positive slopes, the score was the number of negative slopes preceded by a negative sign. This is a restrictive method. It only considers the positive/negative slopes and not their values. Furthermore, it is not possible to achieve a total order when destinations with the same number of positive/negative slopes exist. Tiebreak procedures should be used in those cases. The second method involved the mean of the slope values. This is a compensatory methodology because it admits the compensation between positive and negative scores in such a way that negative behaviours affect the destinations' scores. The method is influenced by extreme values. The last aggregation method proposed was that which used the median of each destination. This is a most robust measure because it is not influenced by extreme values.

The Pearson correlation coefficient (Table 35) was calculated for these values as was Spearman's rho correlation for the rankings (Table 36). Both were statistically significant at the 0.01 level. As a result, it is possible to affirm that the rankings are statistically similar. The ranking corresponding to the sum of positive slopes (PositSlope) appears in the last column of Table 33 (Rank). From the comparison of the PositSlope ranking with the Mean and the Median rankings, the most variable destinations were Nicaragua, Puerto Rico, and Trinidad and Tobago, with 9, 8, and 8 positive slopes. The first two, were affected by a significant negative behaviour in Visitor Exports. Trinidad and Tobago attained the lowest positive scores of the region in the period.

Table 35. Pearson Correlation

	MEDIAN	MEAN	PositSlope
MEDIAN	1		
MEAN	0.969**	1	
PositSlope	0.682**	0.638**	1

Table 36. Spearman's rho Correlation

	MEDIAN	MEAN	PositSlope
MEDIAN	1		
MEAN	0.914**	1	
PositSlope	0.925**	0.829**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own.

3.3.3 Conclusions on Tourism competitiveness through destinations' performance

The proposed method enables a high number of destinations and years to be considered. It is easy to develop, the results are comprehensible and demonstrate another way to analyse TDC, based on the slope of the regression equation for the indicator and the destination. Their values

indicate the behaviour, positive or negative, for each destination in a given period and are not influenced by their size or level of tourism development.

Tourism competitiveness was addressed according to the issues indicated by Abreu-Novais et al. (2016). Destinations were defined as whole countries for this study because of the higher probability of obtaining accurate values for the indicators. Hard data or objective indicators were used because of their availability and the impossibility of obtaining subjective values for all the destinations considered in each year of the period. Moreover, the authors considered it very difficult to find a reliable source of subjective information concerning all the destinations included in the study.

The innovation of this study consists of the use of the slopes of the regression equation calculated for each destination and indicator as being representative of the destination's performance in the period. This research has shed light on the way to analyse TDC. The advantage of the study involves the possibility of comparing a destination's performance in a given period without the need to develop calculations for each individual year. Higher and lower slope values were located, generally, in Small Island destinations with a lower participation in global ranking publications due to incomplete information. Furthermore, the best behaviour corresponds to destinations with a lower level of economic development. The study also enabled destinations to be compared without taking into account their size, or amount, or stages of their tourist products. As a result, this method is applicable to all destinations regardless of their size. A destination's improvement level in a period was employed to determine its ability to attain the best competitiveness position. The slope of the regression equation for each indicator/destination is representative of the destination's performance over time.

Cluster analysis revealed five clearly recognizable groups. Moreover, it was possible to identify a common pattern in the region through the indicators signalled by the Kruskal-Wallis test, such as those that do not cause a difference of significance among groups. As a result, it is possible to affirm that there is a general concern for tourism development in the region, and this is supported by the common interest of local governments. This interest is assumed due to the annual increase in Governmental Travel & Tourism Spending for 32 countries. Furthermore, importance is given to the creation of tourist infrastructures and the support of services directly related to tourism development with results for Capital Investment. Additionally, the spending on domestic trips within the same territory has discreetly augmented, but remains less than in other regions, which is consistent with the WTTC (2018c). There is a similar behaviour in trips

for business purposes to the countries of the area, which is also lower with respect to other geographical regions.

Island states attain a better achievement in more indicators than do continental countries. This consolidates the Caribbean small island destinations as being more tourism dependent and as having a better tourist performance than continental countries. Furthermore, island states enjoy a more positive performance regarding capital investment in tourism due to their higher dependence on this activity compared to the other development possibilities for continental countries. In general, it was possible to analyse the behaviour of one of the most tourist-intense regions worldwide with a detailed analysis of its countries. The research contributes towards the paradox of TDC and to the wide group of initiatives for its analysis. The study respects the relative nature of the TDC concept because the scores involve indicator information during the whole time span analysed. Moreover, slope values explained the degree to which each destination annually improved or worsened in each indicator.

The results were consistent with the latest publications of the WTTC, for which the Caribbean region was placed first in issues concerning TDC, in relative terms, worldwide (WTTC, 2018b, 2018a). Moreover, it enabled those countries that most influenced this global behaviour in the area to be identified. In general, this research proposes an alternative way to analyse TDC and it has been proved that measuring destination competitiveness is not an easy task. In this case, a methodology for measuring TDC must specify additional features such as a positive behaviour in all indicators, the highest global score, or similar.

GENERAL CONCLUSIONS (In Spanish)

Las conclusiones parciales de cada capítulo constatan los resultados derivados de la obtención de los objetivos específicos trazados para la presente investigación. Además, de forma general, se puede concluir que:

1. Actualmente no se ha llegado a consenso en cuanto a la definición más acertada de competitividad de los destinos turísticos. Las definiciones existentes engloban todos los aspectos que se consideran que influyen en el término y, como consecuencia, las actuales investigaciones no proponen nuevos conceptos, sino que emplean los que coexisten para sintetizar su marco teórico.
2. Entre los modelos teóricos existentes para medir la competitividad de los destinos turísticos tampoco se señala uno como el más acertado; sin embargo, el modelo de Crouch y Ritchie (1999) se reconoce como el más detallado y referenciado en la bibliografía especializada. Todos los modelos se apoyan en el empleo de indicadores, simples o compuestos, para medir el concepto subyacente y abordan las relaciones entre sus dimensiones.
3. La perspectiva de análisis del concepto constituye otro de los factores a tener en cuenta para medir la competitividad turística. Entre estas, la perspectiva dinámica se considera mucho más realista, pues el análisis a lo largo del tiempo permite identificar si las acciones o políticas desarrolladas han conseguido obtener mejores resultados, relacionados por los valores de los indicadores.
4. Ante la inexistencia de un método de agregación considerado como el más acertado para la creación de indicadores compuestos de competitividad turística, se han identificado un conjunto de pasos que permiten garantizar la calidad de las medidas propuestas, como son la agrupación conceptual de los indicadores, su cuantificación, el proceso de inclusión de un procedimiento de normalización o no, el establecimiento de los pesos y la forma de agregar la información de modo que se garantice la mayor comprensión de los resultados por parte de los usuarios finales.
5. El Índice de Competitividad de Viajes y Turismo del Foro Económico Mundial es el más fiable y referenciado de entre los índices existentes. Sin embargo, a pesar de sus ventajas, el elevado número de indicadores que necesita para su creación provoca la exclusión de muchos países, generalmente en desarrollo, para los cuales el turismo es la principal fuente de ingreso, como el caso de los países de la región del Caribe.

6. Se ha podido constatar que la región del Caribe es una de las más dependientes del turismo a nivel mundial. En términos relativos, presenta la mayor contribución del turismo al PIB y al número de empleos. Además, es donde, como promedio, los turistas tienen un mayor gasto relativo, incluyendo los gastos de viaje. Es la región donde el gasto en inversión en los sectores relacionados con el turismo es mayor, en correspondencia con las posibilidades económicas. Tienen una baja representación en los rankings internacionales de competitividad y el número de estudios de esta temática desarrollados en la región es escaso. Por todo ello, se considera pertinente la presente investigación.
7. Las propuestas estáticas de medición de la competitividad turística presentadas permitieron obtener resultados similares a los del TTCI en todos los casos. Ello demuestra su viabilidad para seleccionar aquellos indicadores con mayor representatividad del concepto que se analiza y la garantía de empleo de toda la información disponible.
8. El indicador Análisis Envolvente de Datos después de Programación por Metas (DEAGP) permite eliminar las debilidades asociadas al procedimiento desarrollado por el WEF, a la vez que ofrece un índice de competitividad con mayor poder explicativo que respeta los niveles de importancia de los indicadores incluidos.
9. El empleo del Indicador de Programación por Metas posibilita la inclusión de todos los indicadores que se consideren pertinentes para medir el concepto. Permite eliminar los problemas concernientes a la ausencia de valoración para aquellos indicadores con datos ausentes, admite el establecimiento de valores de referencia, de modo que se respeten los valores máximos y mínimos reales y la cantidad o el tamaño de los destinos no afecta el valor de la medida global de competitividad.
10. Los procedimientos dinámicos permitieron determinar el comportamiento del nivel de competitividad de cada uno de los destinos en respuesta a las decisiones internas o las restricciones impuestas de forma externa; además, investigar si el nivel de aumento/disminución de los valores de los indicadores para un destino, con respecto a sí mismo, es mayor que el del resto de sus competidores. Estos últimos resultados fueron consistentes con las informaciones del Consejo Mundial de Viajes y Turismo (WTTC) lo que denota la fiabilidad del procedimiento propuesto.
11. De forma general, las medidas propuestas en los estudios permitieron abordar los problemas derivados de la creación de índices de competitividad turística como son la posibilidad de incluir indicadores objetivos y subjetivos, trabajar, o bien con una selección o con la totalidad de los indicadores. Además, realizar el procedimiento de forma

completamente interna o incluir información externa. Finalmente, no se afectan por el número de destinos.

12. Las propuestas dinámicas permitieron evadir el aspecto relacionado con el tamaño de los destinos. En ambos casos, este aspecto no influye en el procedimiento de obtención de la medida global de competitividad turística.
13. En todos los estudios analizados se pudo realizar una comparación entre los destinos, de forma individual o grupal. En la totalidad de los casos, los pequeños estados insulares, cuya dependencia del turismo es mayor que los estados continentales obtuvieron, de conjunto, mejores valores en su nivel de competitividad.
14. Finalmente, se puede afirmar que el estudio realizado representa una de las mayores contribuciones al análisis de la competitividad de los destinos turísticos de esta región. Los procedimientos desarrollados pueden ser aplicados a otros destinos y conjuntos de datos.

REFERENCES

Abreu-Novais, M., Ruhanen, L., & Arcodia, C. (2016). Destination competitiveness: what we know, what we know but shouldn't and what we don't know but should. *Current Issues in Tourism, 19*(6), 492-512. doi:10.1080/13683500.2015.1091443

Andrades, L., & Dimanches, F. (2017). Destination competitiveness and tourism development in Russia: Issues and challenges. *Tourism Management, 62*, 360-376. doi:10.1016/j.tourman.2017.05.008

Armenski, T., Dwyer, L., & Pavluković, V. (2018). Destination Competitiveness: Public and Private Sector Tourism Management in Serbia. *Journal of Travel Research, 57*(3), 384-398. doi:10.1177/0047287517692445

Armenski, T., Marković, V., Davidović, N., & Jovanović, T. (2011). Integrated Model of Destination Competitiveness. *Geographica Pannonica, 15*(2), 58-69.

Assaf, G. A. (2012). Benchmarking the Asia Pacific tourism industry: A Bayesian combination of DEA and stochastic frontier. *Tourism Management, 32*, 1122-1127. doi:10.1016/j.tourman.2011.11.021

Assaf, G. A., & Dwyer, L. (2013). Benchmarking international tourism destinations. *Tourism Economics, 19*(6), 1233-1247. doi:10.5367/te.2013.0354

Assaker, G., Hallak, R., Esposito Vinzi, V., & O'Connor, P. (2014). An empirical operationalization of countries' destination competitiveness using Partial Least Squares Modelling. *Journal of Travel Research, 53*(1), 26-43.

Athanasoglou, S., Weziak-Bialowolska, D., & Saisana, M. (2014). *Environmental Performance Index 2014. JRC Analysis and Recommendations* (JRC89939). Retrieved from Italy:

Bahar, O., & Kosak, M. (2008). Advancing destination competitiveness research. Comparison between tourists and service providers. *Journal of Travel & Tourism Marketing, 22*(2), 61-71. doi:10.1300/J073v22n02_05

Bãlan, D., Balaure, V., & Veghes, C. (2009). Travel and tourism competitiveness of the world's top destinations: An exploratory assessment. *Annales Universitatis Apulensis Oeconomica, 11*(2), 979-987.

Barros, C., Botti, L., Peypoch, N., Robinot, E., Solonandrasana, B., & Assaf, G. A. (2011). Performance of French destinations: Tourism attraction perspectives. *Tourism Managment, 32*, 141–146. doi:10.1016/j.tourman.2010.01.015

Becker, W. E., Paruolo, P., Saiana, M., & Saltelli, A. (2017). Weights and Importance in Composite Indicators: Mind the Gap. *Ecological Indicators, 80*, 12-22. doi:dx.doi.org/10.1016/j.ecolind.2017.03.056

Berdo, S. (2015). The integrated model of Dwyer and Kim as a tool to evaluate and rank the determinant attributes of a tourist destination competitiveness. *European Journal of Economics and Business Studies, 1*(1), 4.

Blancas, F. J., Caballero, R., González, M., Lozano-Oyola, M., & Pérez, F. (2010a). Goal programming synthetic indicators: An application for sustainable tourism in Andalusian coastal counties. *Ecological Economics, 69*, 2158-2172. doi:10.1016/j.ecolecon.2010.06.016

Blancas, F. J., Contreras, I., & Ramírez-Hurtado, J. M. (2013). Constructing a composite indicator with multiplicative aggregation under the objective of ranking alternatives.

Journal of the Operational Research Society, 64(5), 668-678. https://doi.org/10.1057/jors.2012.90

Blancas, F. J., González, M., Lozano- Oyola, M., & Pérez, F. (2010b). The assessment of sustainable tourism: Application to Spanish coastal destinations. *Ecological Indicators, 10*, 484-492. doi:10.1016/j.ecolind.2009.08.001

Blancas, F. J., Lozano-Oyola, M., González, M., & Caballero, R. (2016). Sustainable tourism composite indicators: a dynamic evaluation to manage changes in sustainability. *Journal of Sustainable Tourism, 24*(10), 1403-1424. doi:10.1080/09669582.2015.1122014

Blancas, F. J., Lozano-Oyola, M., González, M., & Caballero, R. (2018). A dynamic sustainable tourism evaluation using multiple benchmarks. *Journal of Cleaner Production, 174*, 1190-1203. https://doi.org/10.1016/j.jclepro.2017.10.295

Blanco-Cerradelo, L., Gueimonde-Canto, A., Fraiz-Brea, J. A., & Diéguez-Castrillón, M. I. (2018). Dimensions of destination competitiveness: Analyses of protected areas in Spain. *Journal of Cleaner Production, 177*, 782-794. https://doi.org/10.1016/j.jclepro.2017.12.242

Bolaky, B. (2011). Tourism competitiveness in The Caribbean. *CEPAL Review. August 2011*, 55-76.

Borda, J. (1784). *Memoire sur les Elections au Scrutin*. Paris: Histoire de I' Academie Royale des Sciences.

Bornhorst, T., Brent Ritchie, J. R., & Sheehan, L. (2010). Determinants of tourism success for DMOs & destinations: An empirical examination of stakeholders' perspectives. *Tourism Management, 31*(5), 572-589. https://doi.org/10.1016/j.tourman.2009.06.008

Botti, L., & Peypoch, N. (2013). Multi-criteria ELECTRE method and destination competitiveness. *Tourism Management Perspectives, 6*, 108-113. doi:10.1016/j.tmp.2013.01.001

Botti, L., Peypoch, N., Robinot, E., & Solonadrasana, B. (2009). Tourism destination competitiveness: the French regions case. *European Journal of Tourism Research 2(1)*, 5-24.

Browne, C., Di Battista, A., Geyger, T., & Gutknecht, T. (2014). The Executive Opinion Survey: The Voice of the Business Community. In *The Global Competitiveness Report 2014–2015* (pp. 85-96). Geneva: World Economic Forum.

Buhalis, D. (2000). Marketing the competitive destination of the future. *Tourism Management, 21(1)*, 97-116.

Burney, N. A., Johnes, J., Al-Enezi, M., & Al-Musallam, M. (2013). The efficiency of public schools: the case of Kuwait. *Education Economics, 21*(4), 360-379. doi:10.1080/09645292.2011.595580

Cankurt, S., & Subasi, A. (2016). Tourism demand modelling and forecasting using data mining techniques in multivariate time series: a case study in Turkey. *Turkish Journal of Electrical Engineering & Computer Sciences, 24*, 3388-3404. doi:10.3906/elk-1311-134

Carayannis, E., Ferreira, F., Bento, P., Ferreira, J., Jalali, M., & Fernandes, B. (2018). Developing a socio-technical evaluation index for tourist destination competitiveness

using cognitive mapping and MCDA. *Technological Forecasting & Social Change, 131*, 147-158. doi:110.1016/j.techfore.2018.1001.1015.

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research, 2*(6), 429-444. https://doi.org/10.1016/0377-2217(78)90138-8

Chen, C. M., Chen, S. H., & Lee, H. T. (2011). The destination competitiveness of Kinmen's tourism industry: Exploring the interrelationships between tourist perceptions, service performance, customer satisfaction and sustainable tourism. *Journal of Sustainable Tourism, 19(2)*, 247-264.

Chen, J., Petrick, J. F., Papathanassis, A., & Li, X. (2019). A meta-analysis of the direct economic impacts of cruise tourism on port communities. *Tourism Management Perspectives, 31*, 209-218. https://doi.org/10.1016/j.tmp.2019.05.005

Chens, C.-Y., Sok, P., & Sok, K. (2008). Evaluating the Competitiveness of the Tourism Industry in Cambodia: Self-assessment from Professionals. *Asia Pacific Journal of Tourism Research, 13*(1), 41-66. doi:10.1080/10941660701883367

Claver-Cortés, E., Molina-Azorín, J. F., & Pereira-Moliner, J. (2007). Competitiveness in mass tourism. *Annals of Tourism Research, 34*(3), 727-745. doi:10.1016/j.annals.2007.03.010

Clerides, S. (2012). Competition, productivity and competitiveness: Theory, evidence and agenda for Cyprus. *Cyprus Economic Policy Review, 6*(2), 81-88.

Cobham, A., Knobel, A., Bal Yalçın, B., Heitmüller, F., Ateş, L., Millan-Narotzky, L., . . . Janský, P. (2018). *Financial Secrecy Index 2018: Methodology, Technical Report*, . Retrieved from http://www.financialsecrecyindex.com

Cracolici, M. F., & Nijkamp, P. (2008). The attractiveness and competitiveness of tourist destinations: A study of Southern Italian regions. *Tourism Management, 30*, 336-344. doi:10.1016/j.tourman.2008.07.006

Craigwell, R. (2007). *Research Paper No. 2007/19. Tourism Competitiveness in Small Island Developing States.* Retrieved from Helsinki, Finland:

Croes, R. (2005). Value as a Measure of Tourism Performance in the Era of Globalization: Conceptual Considerations and Empirical Findings. *Tourism Analysis, 9*(4), 255-267. doi:10.3727/108354205789807229

Croes, R. (2011). Measuring and explaining competitiveness in the context of small island destinations. *Journal of Travel Research, 50*(4), 431-442. doi:10.1177/0047287510368139

Croes, R., & Kubickova, M. (2013). From potential to ability to compete: Towards a performance-based tourism competitiveness index. *Journal of Destination Marketing & Management, 2*(3), 146-154. doi:10.1016/j.jdmm.2013.07.002

Croes, R., Ridderstaat, J., & Shapoval, V. (2020). Extending tourism competitiveness to human development. *Annals of Tourism Research, 80*, 102825. https://doi.org/10.1016/j.annals.2019.102825

Croes, R., & Semrad, K. (2018). Destination Competitiveness. In C. Cooper, S. Volo, W. C. Gartner, & N. Scott (Eds.), *The SAGE Handbook of Tourism Management: Theories, Concepts and Disciplinary Approaches to Tourism* (Vol. 2, pp. 77-90): SAGE Publications Ltd

Crouch, G. (2007a). *Measuring tourism competitiveness. Research, theory and the WEF Index.* Paper presented at the ANZMAC 2007, Dunedin, New Zealand.

Crouch, G. (2007b). *Modelling destination competitiveness. A survey ans analysis of the impact of competitiveness attributes*. Gold Coast, Queensland: CRC for Susstainable Tourism Pty Ltd.

Crouch, G. (2011). Destination competitiveness: An analysis of determinant attributes. *Journal of Travel Research, 50*(1), 27-45.

Crouch, G., & Ritchie, B. (1999). Tourism, competitiveness, and societal prosperity. *Journal of Business Research, 44 (3)*, 137-152.

Crouch, G., & Ritchie, B. (2003). *Competitive Destination: A Sustainable Tourism Perspective*.

Crouch, G., & Ritchie, B. (2005). Application of the analytic hierarchy process to tourism choice and decision making: a review and illustration applied to destination competitiveness. *Tourism Analysis, 10(1)*, 17-25.

d'Hauteserre, A.-M. (2000). Lessons in managed destination competitiveness: the case of Foxwoods Casino Resort. *Tourism Management, 21*(1), 23-32. https://doi.org/10.1016/S0261-5177(99)00097-7

David, F. R. (2001). *Concepts of strategic managemenr* (8th ed.). New York.

De Keyser, R., & Vanhove, N. (1994). The competitive situation of tourism in the Caribbean area methodological approach. *The Tourist Review, 49*(3), 19-22.

de la Peña, M. R., Núñez-Serrano, J. A., Turrión, J., & Velázquez, F. J. (2019). A New Tool for the Analysis of the International Competitiveness of Tourist Destinations Based on Performance. *Journal of Travel Research, 58*(2), 207-223. doi:10.1177/0047287517746012

Del Chiappa, G., Atzeni, M., & Ghasemi, V. (2018a). Community-based collaborative tourism planning in islands: A cluster analysis in the context of Costa Smeralda. *Journal of Destination Marketing & Management, 8*, 41-48. https://doi.org/10.1016/j.jdmm.2016.10.005

Del Chiappa, G., Lorenzo-Romero, C., & Gallarza, M. (2018b). Host community perceptions of cruise tourism in a homeport: A cluster analysis. *Journal of Destination Marketing & Management, 7*, 170-181. doi.org/10.1016/j.jdmm.2016.08.011

Díaz-Balteiro, L., & Romero, C. (2004). In search of a natural systems sustainability index. *Ecological Economics, 49*(3), 401-405. https://doi.org/10.1016/j.ecolecon.2004.02.005

Diéguez, I., Gueimonde, A., Sinde, A., & Blanco, L. (2011). Análisis de los principales modelos explicativos de la competitividad de los destinos turísticos en el marco de la sostenibilidad. *Revista Cultura e Turismo 05(2)*, 101-124.

Dillman, D. A., Sinclair, M. D. S., & Clark, J. R. (1993). Effects of questionnaire length, respondent-friendly design, and a difficult question on response rates for occupant-addressed census mail surveys. *Public Opinion Quarterly, 57*(3), 289-304.

Dimoska, T., & Trimcev, B. (2012). Competitiveness strategies for supporting economic development of the touristic destination. *Procedia-Social and Behavioral Sciences 44*, 279-288.

Dorta, D., & Hernández-Martín, R. (2015). Subnational tourism competitiveness performance. The Canary Islands vs. the German Länder. *European Journal of Tourism Research, 10*, 51-63.

Drakulić Kovačević, N., Kovačević, L., Stankov, U., Dragićević, V., & Miletić, A. (2018). Applying destination competitiveness model to strategic tourism development of small destinations: The case of South Banat district. *Journal of Destination Marketing & Management, 8*, 114-124. https://doi.org/10.1016/j.jdmm.2017.01.002

Dupeyras, A., & MacCallum, N. (2013). *Indicators for Measuring Competitiveness in Tourism: A Guidance Document* (Vol. 2013/02): OECD Publishing.

Dwyer, L., Cvelbar, L. K., Edwards, D., & Mihalic, T. (2012). Fashioning a destination tourism future: The case of Slovenia. *Tourism Management, 33*(2), 305-316. https://doi.org/10.1016/j.tourman.2011.03.010

Dwyer, L., Cvelbar, L. K., Mihalič, T., & Koman, M. (2014). Integrated Destination Competitiveness Model: Testing Its Validity and Data Accessibility. *Tourism Analysis, 19*(1), 1-17. https://doi.org/10.3727/108354214X13927625340073

Dwyer, L., Dragićević, V., Armenski, T., Mihalič, T., & Knežević Cvelbar, L. (2016). Achieving destination competitiveness: an importance–performance analysis of Serbia. *Current Issues in Tourism, 19*(13), 1309-1336. doi:10.1080/13683500.2014.944487

Dwyer, L., Forsyth, P., & Rao, P. (2000). The price competitiveness of travel and tourism: a comparison of 19 destinations. *Tourism Management, 21*(1), 9-22. https://doi.org/10.1016/S0261-5177(99)00081-3

Dwyer, L., Forsyth, P., & Rao, P. (2002). Destination price competitiveness: Exchange rate changes versus domestic inflation. *Journal of Travel Research, 40*(3), 328–336.

Dwyer, L., & Kim, C. (2003). Destination Competitiveness: Determinants and indicators. *Current Issues in Tourism, 6*(5), 369-414.

Dwyer, L., Mellor, R., Livaic, Z., Edwards, D., & Kim, C. (2004). Attributes of destination competitiveness: a factor analysis. *Tourism Analysis, 9*(1-2), 91-101.

Enright, M. J., & Newton, J. (2004). Tourism destination competitiveness: a quantitative approach. *Tourism Management, 25*(6), 777-788. doi:10.1016/j.tourman.2004.06.008

Enright, M. J., & Newton, J. (2005). Determinants of tourism destination competitiveness in Asia Pacific: Comprehensiveness and universality. *Journal of Travel Research, 43*(4), 339-350.

Erikson, D. P., & Lawrence, J. (2008). *Beyond Tourism:The Future of the Services Industry in the Caribbean. Caribbean Papers*. Retrieved from Ontario, Canada:

Evren, S., & Kozak, N. (2018). Competitive positioning of winter tourism destinations: A comparative analysis of demand and supply sides perspectives–Cases from Turkey. *Journal of Destination Marketing & Management, 9*, 247-257. https://doi.org/10.1016/j.jdmm.2018.01.009

F-CCA. (2018). *2018 Cruise Industry Overview*. Retrieved from Florida:

Flores, D., & Barroso, M. (2009). *Análisis de la competencia en la actividad turística*. Oviedo.

Ganguli, S., & Husain, A. (2017). A qualitative analysis of Singapore's medical tourism competitiveness. *Tourism Management Perspectives, 21*, 74-84. doi:10.1016/j.tmp.2016.12.002

Garau, J. (2006). *Propuesta de dos índices para la mediación de la competitividad de los destinos de sol y playa del Mediterráneo: Avance de resultados desde el punto de vista de la demanda.* Paper presented at the XV Simposio Internacional de turismo y ocio, Barcelona, Spain.

Goffi, G., & Cucculelli, M. (2018). Explaining tourism competitiveness in small and medium destinations: the Italian case. *Current Issues in Tourism*, 1-31. doi:10.1080/13683500.2017.1421620

Goffi, G., Cucculelli, M., & Masiero, L. (2019). Fostering tourism destination competitiveness in developing countries: The role of sustainability. *Journal of Cleaner Production, 209*, 101-115. https://doi.org/10.1016/j.jclepro.2018.10.208

Gómez-Vega, M., & Picazo-Tadeo, A. (2019). Ranking world tourist destinations with a composite indicator of competitiveness: To weigh or not to weigh? *Tourism Management, 72*, 281-291. https://doi.org/10.1016/j.tourman.2018.11.006

Gomezelj, D. O., & Mihalic, T. (2008). Destination competitiveness—Applying different models, the case of Slovenia. *Tourism Management, 29*, 294-307. doi:10.1016/j.tourman.2007.03.009

González, E., Cárcaba, A., & Ventura, J. (2018). Weight Constrained DEA Measurement of the Quality of Life in Spanish Municipalities in 2011. *Social Indicators Research, 136*(3), 1157-1182. https://doi.org/10.1007/s11205-016-1426-y

Gooroochurn, N., & Sugiyarto, G. (2005). Competitiveness indicators in the travel and tourism industry. *Tourism Economics, 11*(1), 25-43.

Gursoy, D., Baloglu, S., & Chi, C. G. (2009). Destination Competitiveness of Middle Eastern Countries: An Examination of Relative Positioning. *Anatolia, 20*(1), 151-163. doi:10.1080/13032917.2009.10518901

Hair, J. F. J., Anderson, R. E., Tatham, R. L., & Black, W. C. (1999). *Multivariate data Analisys* (5th ed.). Madrid: Prentice Hall International, Inc.

Hanafiah, M. H., & Zulkifly, M. I. (2019). The Evolution of Tourism Destination Competitiveness (TDC) Models. In I. Global (Ed.), *Positioning and Branding Tourism Destinations for Global Competitiveness* (pp. 23-48): IGI Global.

Hassan, S. S. (2000). Determinants of market competitiveness in an environmentally sustainable tourism industry. *J. Travel Res., 38*(3), 239-245.

Heath, E. (2003). Towards a model to enhance destination competitiveness: A Southern African perspective. *Journal of Hospitality and Tourism Management, 10*(2), 124-142.

Hong, W. C. (2008). *Competitiveness in the Tourism Sector: A Comprehensive Approach from Economic and Management Points*. Amsterdam: Physica-Verlag.

Hong, W. C. (2009). Global competitiveness measurement for the tourism sector. *Current Issues in Tourism, 12*(2), 105-132. doi:10.1080/13683500802596359

Hu, W., & Wall, G. (2005). Environmental Management, Environmental Image and the Competitive Tourist Attraction. *Journal of Sustainable Tourism, 13*(6), 617-635. doi:10.1080/09669580508668584

Huang, J.-H., & Peng, K.-H. (2012). Fuzzy Rasch model in TOPSIS: A new approach for generating fuzzy numbers to assess the competitiveness of the tourism industries in Asian countries. *Tourism Management, 33*, 456-465. doi:10.1016/j.tourman.2011.05.006

Hudson, S., Ritchie, B., & Timur, S. (2004). Measuring destination competitiveness: An empirical study of Canadian ski resorts. *Tourism and Hospitality Planning & Development, 1*(1), 79-94.

Huybers, T., & Bennett, J. (2003). Environmental Management and the Competitiveness of Nature-Based Tourism Destinations. *Environmental and Resource Economics, 24*(3), 213-233. doi:10.1023/a:1022942001100

Ivaldi, E., Bonatti, G., & Soliani, R. (2017). An Indicator for the Measurement of Political Participation: The Case of Italy. *Social Indicators Research, 132*(2), 605-620. https://doi.org/10.1007/s11205-016-1303-8

Ivanov, S., & Webster, C. (2013). Tourism's impact on growth: The Role of Globalisation. *Annals of Tourism Research, 41*, 231-236. https://doi.org/10.1016/j.annals.2012.12.008

Jackman, M., Lorde, T., Lowe, S., & Alleyne, A. (2011). Evalulating tourism competitiveness of small island developing states: a revealed comparatie advantage. *Anatolia: An International Journal of Tourism and Hospitality Research, 22*(3), 350-360. doi:10.1080/13032917.2011.626311

Jamaica Tourist Board. (2016). *Annual Travel Statistics, 2015*. Retrieved from Kingston, Jamaica:

Jiang, M., DeLacy, T., Mkiramweni, N., P., & Harrisson, D. (2011). Some evidence for tourism alleviating poverty. *Annals of Tourism Research, 38*(3), 1181-1184. doi:10.1016/j.annals.2011.03.019

Johnson, D. E. (1998). *Applied Multivariate methods for data analysis*. Kansas, USA: Brooks Cole Publishing Company and ITP Company.

Joshi, O., Poudyal, N. C., & Larson, L. R. (2017). The influence of sociopolitical, natural, and cultural factors on international tourism growth: a cross-country panel analysis. *Environment, Development and Sustainability, 19*(3), 825-838. doi:10.1007/s10668-016-9767-x

Kao, C., & Hung, H. T. (2005). Data envelopment analysis with common weights: the compromise solution approach. *Journal of the Operational Research Society, 56*(10), 1196-1203. doi:10.1057/palgrave.jors.2601924

Kayar, Ç. H., & Kozak, N. (2010). Measuring destination competitiveness: An application of the travel and tourism competitiveness index (2007). *Journal of Hospitality Marketing & Management, 19*(3), 203–216. doi:10.1080/19368621003591319

Khan, S. A. R., Qianli, D., SongBo, W., Zaman, K., & Zhang, Y. (2017). Travel and tourism competitiveness index: The impact of air transportation, railways transportation, travel and transport services on international inbound and outbound tourism. *Journal of Air Transport Management, 58*, 125-134. https://doi.org/10.1016/j.jairtraman.2016.10.006

Kim, C. (2001). *Destination competitiveness: Development of a model with application to Australia and the Republic of Korea*: Korea Tourism Research Institute.

Kim, N., & Wicks, B. (2010). *Rethinking tourism cluster development models for global competitiveness*. Paper presented at the International CHRIE Conference. http://scholarworks.umass.edu/refereed/CHRIE_2010/Friday/28

Knežević, L., Dwyer, L., Koman, M., & Mihalič, T. (2016). Drivers of Destination Competitiveness in Tourism:A Global Investigation. *Journal of Travel Research, 55*(8), 1041-1050. https://doi.org/10.1177/0047287515617299

Komppula, R. (2014). The role of individual entrepreneurs in the development of competitiveness for a rural tourism destination - A case study. *Tourism Management, 40*, 361-371. doi:10.1016/j.tourman.2013.07.007

Koo, C., Shin, S., Gretzel, U., Hunter, W. C., & Chung, N. (2016). Conceptualization of Smart Tourism Destination Competitiveness. *Asia Pacific Journal of Information Systems, 26*(4), 561-576. doi:dx.doi.org/10.14329/apjis.2016.26.4.561

Kovacevic, M., Assa, J., Bonini, A., Calderon, C., Hsu, Y.-C., Lengfelder, C., . . . Tapia, H. (2018). *Human Development Indices and Indicators: 2018 Statistical Update*. New York, USA: United Nations Development Programme.

Kozak, M., Baloğlu, S., & Bahar, O. (2010). Measuring destination competitiveness: Multiple destinations versus multiple nationalities. *Journal of Hospitality Marketing & Management, 19*(1), 56–71. https://doi.org/10.1080/19368620903327733

Kozak, M., & Rimmington, M. (1999). Measuring tourist destination competitiveness: conceptual considerations and empirical findings. *International Journal of Hospitality Management, 18*(3), 273-283. https://doi.org/10.1016/S0278-4319(99)00034-1

Kubickova, M., Croes, R., & Rivera, M. (2017). Human agency shaping tourism competitiveness and quality of life in developing economies. *Tourism Management Perspectives, 22*, 120-131. https://doi.org/10.1016/j.tmp.2017.03.002

Kubickova, M., & Martin, D. (2020). Exploring the relationship between government and destination competitiveness: The TALC model perspective. *Tourism Management, 78*, 104040. https://doi.org/10.1016/j.tourman.2019.104040

Kuosmanen, T., Cherchye, L., & Sipiläinen, T. (2006). The law of one price in data envelopment analysis: Restricting weight flexibility across firms. *European Journal of Operational Research, 170*(3), 735-757.https://doi.org/10.1016/j.ejor.2004.07.063

Lakicevic, M., Srdjevic, Z., Srdjevic, B., & Zlatic, M. (2014). Decision making in urban forestry by using approval voting and multicriteria approval method (case study: Zvezdarska forest, Belgrade, Serbia). *Urban Forestry & Urban Greening, 13*(1), 114-120. doi:10.1016/j.ufug.2013.11.001

Lall, S. (2001). Competitiveness indices and developing countries: An economic evaluation of the global competitiveness report. *World Development, 29*(9), 1501-1525.

Lamboray, C. (2007). A comparison between the prudent order and the ranking obtained with Borda's, Copeland's, Slater's and Kemeny's rules. *Mathematical Social Sciences, 54*(1), 1-16. https://doi.org/10.1016/j.mathsocsci.2007.04.004

Lawrence, L., Wu, W.-W., & Yu-Ting, L. (2012). Promoting Food Tourism with Kansei Cuisine Design. *Procedia - Social and Behavioral Sciences, 40*, 609-615. https://doi.org/10.1016/j.sbspro.2012.03.238

Lee, S. (2015). Research Note: Quality of Government and Tourism Destination Competitiveness. *Tourism Economics, 21*(4), 881-888. doi:10.5367/te.2014.0377

Leung, X. Y., & Baloglu, S. (2013). Tourism competitiveness of Asia Pacific destinations. *Tourism Analysis, 18*(4), 371-384. https://doi.org/10.3727/108354213X13736372325876

Li, G., Song, H., Cao, Z., & Wu, D. C. (2013). How competitive is Hong Kong against its competitors? An econometric study. *Tourism Management, 36*(1), 247–256. doi:10.1016/j.tourman.2012.11.019

Lumini, A., & Nanni, L. (2006). Detector of image orientation based on Borda Count. *Pattern Recognition Letters, 27*(3), 180-186. doi:doi:10.1016/j.patrec.2005.08.023

Madden, G., & Savage, S. J. (1999). Telecommunications productivity, catch-up and innovation. *Telecommunications Policy, 23*(1), 65-81. https://doi.org/10.1016/S0308-5961(98)00076-7

Mante, B. (2001). Measuring the performance of the state secondary schools in Victoria: An application of data envelopment analysis. *Education Research and Perspectives, 28*(1), 105-132.

Martín, J. A. R., de Dios Jiménez, J., Fernández, J. A. S., & Martín, J. M. M. (2016). Millennium Development Goals 4 and 5: Progress in the Least Developed Countries of Asia *Social Indicators Research, 129*(2), 489-504. https://doi.org/10.1007/s11205-015-1149-5

Mazanec, J. A., & Ring, A. (2011). Tourism destination competitiveness: Second thoughts on the world economic forum reports. *Tourism Economics, 17*(4), 725-751.

Mazanec, J. A., Wöber, K., & Zins, A. H. (2007). Tourism destination competitiveness: From definition to explanation? *Journal of Travel Research, 46*(1), 86-95.

Mazaro, R. M. (2007). A sustentável leveza do visitar: modelo de avaliação de competitividade e sustentabilidade estratégica dos destinos turísticos. *Turismo-Visão e Ação, 9*(3), 325-339.

Mazziotta, M., & Pareto, A. (2019). Use and Misuse of PCA for Measuring Well-Being. *Social Indicators Research, 142*(2), 451-476. doi:10.1007/s11205-018-1933-0

McLeod, M., Lewis, E. H., & Spencer, A. (2017). Re-inventing, revolutionizing and transforming Caribbean tourism: Multi-country regional institutions and a research agenda. *Journal of Destination Marketing & Management, 6*(1), 1-4. https://doi.org/10.1016/j.jdmm.2016.08.009

Mei, X., Arcodia, C., & Ruhanen, L. (2012). Towards tourism innovation: A critical review of public polices at the national level. *Tourism Management Perspectives, 4*, 92-105.

Melián-González, A., & García-Falcón, J. M. (2003). Competitive potential of tourism in destinations. *Annals of Tourism Research, 30*(3), 720-740. https://doi.org/10.1016/S0160-7383(03)00047-1

Mendola, D., & Volo, S. (2017). Building composite indicators in tourism studies: Measurements and applications in tourism destination competitiveness. *Tourism Management, 59*, 541-553. doi:0.1016/j.tourman.2016.08.011.

Meng, F. (2006). *An examination of destination competitiveness from the tourists' perspective: The relationship between quality of tourism experience and perceived destination competitiveness. Ph.D. Dissertation*. Blacksburg, Virginia.

Mihalic, T. (2000). Environmental management of a tourist destination. A factor of tourism competitiveness. *Tourism Management, 21*, 65-78.

Nardo, Saisana, M., Saltelli, A., & Tarantola, S. (2005a). *Tools for composite indicators building*. Retrieved from http://farmweb.jrc.cec.eu.int/ci/bibliography.htm

Nardo, Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovanni, E. (2005b). *Handbook on constructing composite indicators: Methodology and user guide*: OECD Publishing.

Navickas, V., & Malakauskaite, A. (2009). The Possibilities for the Identification and Evaluation of Tourism Sector Competitiveness Factors *Engineering Economics, 1*(61), 37-44.

Neto, A. Q., Dimmock, K., Lohmann, G., & Scott, N. (2020). Destination competitiveness: how does travel experience influence choice? *Current Issues in Tourism, 23*(13), 1673-1687. doi:10.1080/13683500.2019.1641070

Nuray, R., & Can, F. (2006). Automatic ranking of information retrieval systems using data fusion. *Information Processing & Management, 42*(3), 595-614. https://doi.org/10.1016/j.ipm.2005.03.023

OECD. (2000). *Frameworks to Measure Sustainable Development*. Paris: Organisation for Economic Co-operation and Development.

OECD. (2008). *Handbook on constructing composite indicators: Methodology and user guide*. Organization for Economic Co-operation and Development: Joint Research Center, European Commission.

Ortega, F., Bobadilla, J., Hernando, A., Guti, A., #233, & Rrez. (2013). Incorporating group recommendations to recommender systems: Alternatives and performance. *Inf. Process. Manage., 49*(4), 895-901. doi:10.1016/j.ipm.2013.02.003

Parra-López, E., & Oreja-Rodríguez, J. R. (2014). Evaluation of the competiveness of tourist zones of an island destination: Anapplication of a Many-Facet Rasch Model (MFRM). *Journal of Destination Marketing & Management, 3*, 114–121. http://dx.doi.org/10.1016/j.jdmm.2013.12.007

Pasternak, L. (2018). CTO Caribbean Tourism Performance Report 2017: some growth after hurricane impact; recovery underway. Retrieved from http://travelmarketsinsider.net/cto-caribbean-tourism-performance-report-2017-some-growth-after-hurricane-impact-recovery-underway/

Pearce, D. G. (1997). Competitive Destination Analysis in Southeast Asia. *Journal of Travel Research, 35*(4), 16-24. doi:10.1177/004728759703500403

Pena, J. A. (1978). La distancia P: un método para la medición del bienestar. *Revista española de Economía, 8*, 49-89.

Pérez, F., Molinos-Senante, M., Gómez, T., Caballero, R., & Sala-Garrido, R. (2018). Dynamic goal programming synthetic indicator: an application for water companies sustainability assessment. *Urban Water Journal, 15*(6), 592-600. doi:10.1080/1573062X.2018.1529191

Pérez, V., Guerrero, F., González, M., Pérez, F., & Caballero, R. (2013). Composite indicator for the assessment of sustainability: The case of Cuban nature-based tourism destinations. *Ecological Indicators, 29*, 316-324. https://doi.org/10.1016/j.ecolind.2012.12.027

Pérez, V., Guerrero, F., González, M., Pérez, F., & Caballero, R. (2014). The sustainability of Cuban nature based tourism destinations: a quantitative approach. *Tourism & Management Studies, 10*(2), 32-40.

Pérez, V., Hernández, A., Guerrero, F., León, M. A., da Silva, C. L., & Caballero, R. (2016). Sustainability Ranking for Cuban Tourist Destinations Based on Composite Indexes. *Social Indicators Research, 129*, 425-444. https://doi.org/10.1007/s11205-015-1110-7

Pérez, V., Hernández, A., Guerrero, F., León, M. A., da Silva, C. L., & Caballero, R. (2017). Measuring the sustainability of Cuban tourism destinations considering stakeholders' perceptions. *International Journal of Tourism Research, 19*, 318-328. https://doi.org/10.1002/jtr.2114

Pérez, V., Pérez, F., Contreras Rubio, I., & Guerrero, F. M. (2020). An approach to the travel and tourism competitiveness index in the Caribbean region. *International Journal of Tourism Research, n/a*(n/a). doi:10.1002/jtr.2411

Pérez-Moreno, S., Rodríguez-Díaz, B., & Luque, M. (2016). Assessing global competitiveness under multi-criteria perspective. *Economic Modelling, 53*, 398-408. https://doi.org/10.1016/j.econmod.2015.10.030

Perna, F., Custódio, M. J., & Oliveira, V. (2018). Destination Competitiveness: an application model for the south of Portugal versus the Mediterranean region of Spain: COMPETITIVTOUR. *Tourism Management Studies, 14*(1), 19-29. http://dx.doi.org/10.18089/tms.2018.14102

Pike, S. (2008). *Destination Marketing. An Integrated Marketing Communication Approach*. Oxford, UK.: Butterworth-Heinemann, ELSEVIER.

Poon, A. (1993). *Tourism, Technology and Competitive Strategies*. Wallingford, UK: CAB International.

Porter, M., Sachs, J., & McArthur, J. (2001). Executive summary: Competitiveness and stages of economic development. In W. E. Forum (Ed.), *The Global Competitiveness Report 2001–2002*. Geneva: World Economic Forum.

Pulido-Fernández, J. I., Andrades-Caldito, L., & Sánchez-Rivero, M. (2015). Is sustainable tourism an obstacle to the economic performance of the tourism industry? Evidence from an international empirical study. *Journal of Sustainable Tourism, 23*(1), 47-64. doi:10.1080/09669582.2014.909447

Pulido-Fernández, J. I., & Rodríguez-Díaz, B. (2016). Reinterpreting the World Economic Forum's global tourism competitiveness index. *Tourism Management Perspectives, 20*, 131-140. doi:10.1016/j.tmp.2016.08.001

Reilly, B. (2002). Social Choice in the South Seas: Electoral Innovation and the Borda Count in the Pacific Island Countries. *International Political Science Review, 23*(4), 355-372. doi:10.1177/0192512102023004002

Ritchie, B., & Crouch, G. (2000). The competitive destination: A sustainability perspective. *Tourism Management, 21*, 1-7.

Ritchie, B., & Crouch, G. (2003). *The Competitive Destination: A Custainable Tourism Perspective*. Wallingford, UK.: CABI Publishing.

Rodríguez-Díaz, B., & Pulido-Fernández, J. I. (2020). Analysis of the Worth of the Weights in a new Travel and Tourism Competitiveness Index. *Journal of Travel Research*, 0047287519899982. doi:10.1177/0047287519899982

Rogge, N. (2018). Composite indicators as generalized benefit-of-the-doubt weighted averages. *European Journal of Operational Research, 267*(1), 381-392. https://doi.org/10.1016/j.ejor.2017.11.048

Russo, A., & Richards, G. (2016). *Reinventing the local in tourism: Producing, consuming and negotiating place*. Bristol: Channel View Publications.

Saisana, M., & Tarantola, S. (2002). *State-of-the-art report on current methodologies and practices for composite indicator development*. Retrieved from European Commission-JCR: Italy:

Salinas Fernández, J. A., Serdeira Azevedo, P., Martín Martín, J. M., & Rodríguez Martín, J. A. (2020). Determinants of tourism destination competitiveness in the countries most visited by international tourists: Proposal of a synthetic index. *Tourism Management Perspectives*, *33*, 100582. https://doi.org/10.1016/j.tmp.2019.100582

Scott, B. R., & Lodge, G. C. (1985). *U.S. Competitiveness in the World Economy*. Boston, MA: Havard Business School Press.

Shousheng, C., Chunfeng, L., & Teng, G. (2012). Research on Tourism Competitiveness of Chinese Island Counties: Based on Factor and Cluster Analysis. *Chinese Journal of Population Resources and Environment, 10*(4), 30-34. doi:10.1080/10042857.2012.10685105

Somarriba, N., & Zarzosa, P. (2019). Quality of Life in the European Union: An Econometric Analysis from a Gender Perspective. *Social Indicators Research, 142*(1), 179-200. https://doi.org/10.1007/s11205-018-1913-4

Squalli, J., Wilson, K., & Hugo, S. (2008). An analysis of growth competitiveness. *International Review of Applied Economics, 22*(1), 105-126. doi:10.1080/02692170701745978

Tang, C. F., & Tang, E. C. (2013). Haw stable is the tourism-led growth hypothesis in Malaysia. Evidence from disaggregated tourism markets. *Tourism Management, 37*, 52-57.

Tóth, A. (2016). The Impact of the Hotel Industry on the Competitiveness of Tourism Destinations in Hungary. *Journal of Competitiveness, 8*(4), 85-104. https://doi.org/10.7441/joc.2016.04.06

Transparency_International. (2018). *The Corruption Perceptions Index 2018*. Retrieved from Berlin, Germany: https://www.transparency.org

Tsai, H., Song, H., & Wong, K. K. F. (2009). Tourism and hotel competitiveness research. *Journal of Travel & Tourism Marketing, 26*(5-6), 522-546. doi:10.1080/10548400903163079

UNWTO. (2016). *Panorama OMT del Turismo Internacional. Edición 2016*. Madrid: UNWTO.

UNWTO. (2018). *Panorama OMT del turismo internacional Edición 2018* (UNWTO Ed.). Madrid: UNWTO.

UNWTO. (2019). International Tourist Arrivals Reach 1.4 billion Two Years Ahead of Forecasts [Press release]. Retrieved from http://www2.unwto.org/press-release/2019-01-21/international-tourist-arrivals-reach-14-billion-two-years-ahead-forecasts

UNWTO. (2020). *World Tourism Barometer* (UNWTO Ed.). Madrid, Spain: UNWTO.

Uysal, M., Chen, J. S., & Williams, D. R. (2000). Increasing state market share through a regional positioning. *Tourism Management, 21*(1), 89-96. https://doi.org/10.1016/S0261-5177(99)00082-5

Vainikainen, N., Kangas, A., & Kangas, J. (2008). Empirical study on voting power in participatory forest planning. *Journal of environmental management, 88*(1), 173-180. doi:10.1016/j.jenvman.2007.02.004

Valcárcel-Aguiar, B., & Murias, P. (2019). Evaluation and Management of Urban Liveability: A Goal Programming Based Composite Indicator *Social Indicators Research, 142*(2), 689-712. https://doi.org/10.1007/s11205-018-1861-z

Valcárcel-Aguiar, B., Murias, P., & Rodríguez-González, D. (2019). Sustainable Urban Liveability: A Practical Proposal Based on a Composite Indicator. *Sustainability, 11*(1), 86-104. https://doi.org/10.3390/su11010086

Valls, J. F. (2004). *Gestión de destinos turísticos sostenibles.* Barcelona, Spain: Ediciones Gestión 2000.

Verbunt, P., & Rogge, N. (2018). Geometric composite indicators with compromise Benefit-of-the-Doubt weights. *European Journal of Operational Research, 264*(1), 388-401. https://doi.org/10.1016/j.ejor.2017.06.061

Vidoli, F., & Mazziotta, C. (2011). Robust weighted composite indicators by means of frontier methods with an application to European infrastructure endowment. *Statistica Applicata-Italian Journal of Applied Statistics, 23*(2), 259-282.

Vodeb, K. (2010). Cross-border regions as porential tourist destinations along the Slovene Croatian frontier. *Tourism and Hospitality Management, 16*(2), 219-228.

Webster, C., & Ivanov, S. (2014). Transforming competitiveness into economic benefits: Does tourism stimulate economic growth in more competitive destinations? *Tourism Management, 40*, 137-140. http://dx.doi.org/10.1016/j.tourman.2013.06.003

WEF. (2007). *The Travel & Tourism Competitiveness Report 2007. Furthering the Process of Economic Development* (W. E. Forum Ed.). Geneva, Switzerland: World Economic Forum.

WEF. (2008). *The Travel & Tourism Competitiveness Report 2008: Balancing Economic Development and Environmental Sustainability* (W. E. Forum Ed.). Geneva, Switzerland: World Economic Forum.

WEF. (2009). *The Travel & Tourism Competitiveness Report 2009. Managing in a Time of Turbulence*. Geneva, Switzerland: World Economic Forum.

WEF. (2015). *The Travel & Tourism Competitiveness Report 2015. Growth through Shocks.* (W. E. Forum Ed.). Geneva, Switzerland: World Economic Forum.

WEF. (2017). *The Travel & Tourism Competitiveness Report 2017. Paving the way for a more sustainable and inclusive future* (W. E. Forum Ed.). Geneva, Switzerland: World Economic Forum.

WEF. (2019). *The Travel & Tourism Competitiveness Report 2019. Travel and Tourism at a Tipping Point* (WEF Ed.). Geneva, Switzerland: World Economic Forum.

Wendling, Z. A., Emerson, J. W., Esty, D. C., Levy, M. A., & de Sherbinin, A. (2018). *2018 Environmental Performance Index*. Retrieved from https://epi.yale.edu/

Wint, A. G. (2003). *Competitiveness in Small Developing States: Insights from the Caribbean.* Kingston, Jamaica: University of the West Indies Press.

Wood, R. E. (2000). Caribbean cruise tourism: Globalization at sea. *Annals of Tourism Research, 27*(2), 345-370. https://doi.org/10.1016/S0160-7383(99)00073-0

World Bank. (2005). *Latin America and the Caribbean - A time to choose - Caribbean development in the 21st century*. Retrieved from Washington, DC:

http://documents.worldbank.org/curated/en/434771468231536350/Latin-America-and-the-Caribbean-A-time-to-choose-Caribbean-development-in-the-21st-century

WTTC. (2011). *Travel & Tourism Economic Impact Caribbean*. Retrieved from

WTTC. (2018a). *Country New League table summary 2017*. Retrieved from London, UK: www.wttc.org/-897/media/files/reports/economic-impact-research/documents-8982018/newleaguetablesummary.pdf

WTTC. (2018b). *New League table summary Regional 2017*. Retrieved from London. UK: www.wttc.org/-893/media/files/reports/economic-impact-research/documents-8942018/newleaguetablesummaryregional.pdf

WTTC. (2019). *Travel & Tourism Benchmarking Research Trends 2019. How does travel & tourism compare to other sectors?* Retrieved from https://www.wttc.org/economic-impact/benchmark-reports/

Wu, W.-W. (2011). Beyond Travel & Tourism competitiveness ranking using DEA, GST, ANN and Borda count. *Expert Systems with Applications, 38*(10), 12974-12982. https://doi.org/10.1016/j.eswa.2011.04.096

Wu, W.-W., Lan, L., & Lee, Y.-T. (2012). Critiquing the World Econnomic Forum's concept of destination competitiveness: A further analysis. *Tourism Management Perspectives, 4*, 198-206. http://dx.doi.org/10.1016/j.tmp.2012.08.008

Xiao-Bai, L., & Reeves, G. R. (1999). A multiple criteria approach to data envelopment analysis. *European Journal of Operational Research, 115*(3), 507-517. https://doi.org/10.1016/S0377-2217(98)00130-1

Zehrer, A., Smeral, E., & Hallmann, K. (2017). Destination competitiveness—A comparison of subjective and objective indicators for winter sports areas. *Journal of Travel Research, 56*(1), 55-66. doi:10.1177/0047287515625129

Zhang, H., Gu, C.-L., Gu, L.-W., & Zhang, Y. (2011). The evaluation of tourism destination competitiveness by TOPSIS & information entropy: A case in the Yangtze River Delta of China. *Tourism Management, 32*, 443-451. doi:10.1016/j.tourman.2010.02.007

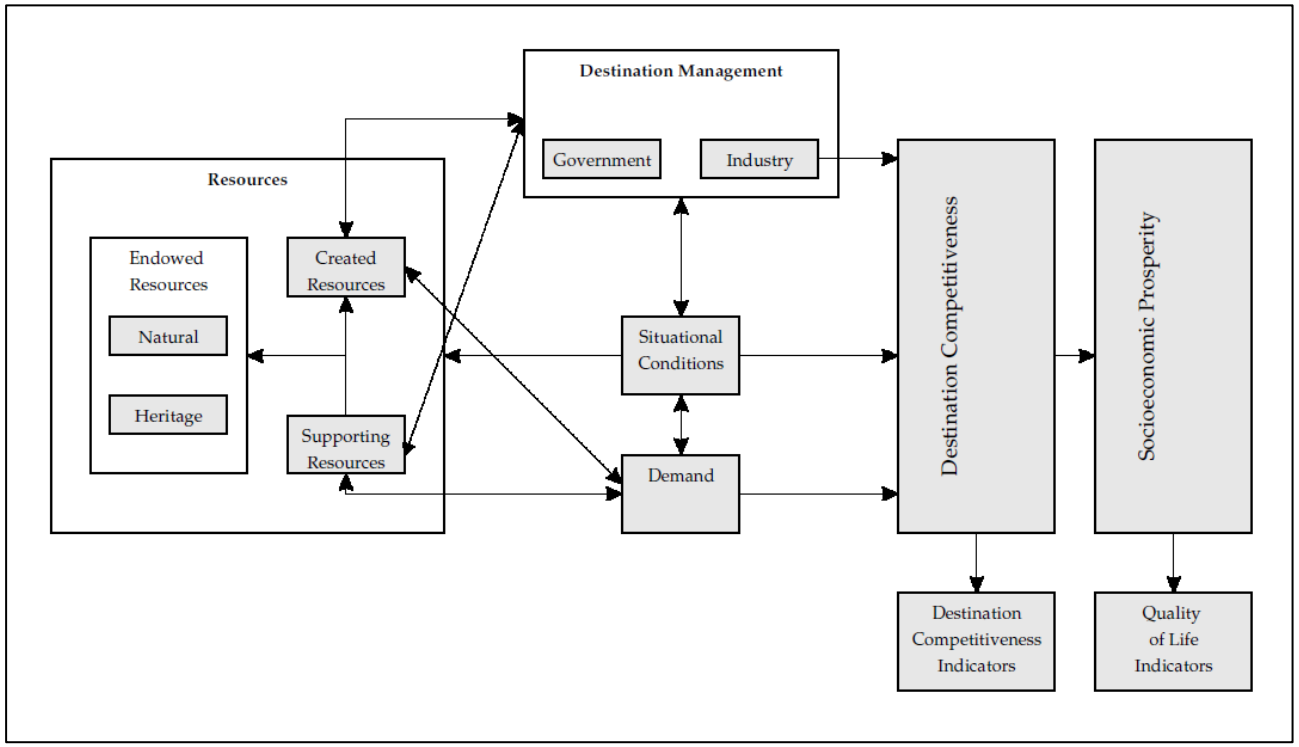
Zhou, Y., Maumbe, K., Deng, J., & Selin, S. W. (2015). Resource-based destination competitiveness evaluation using a hybrid analytic hierarchy process (AHP): The case study of West Virginia. *Tourism Management Perspectives, 15*, 72-80. doi:10.1016/j.tmp.2015.03.007

ANNEXES

Annex I: Crouch & Ritchie (1999) Conceptual Model of Destination Competitiveness

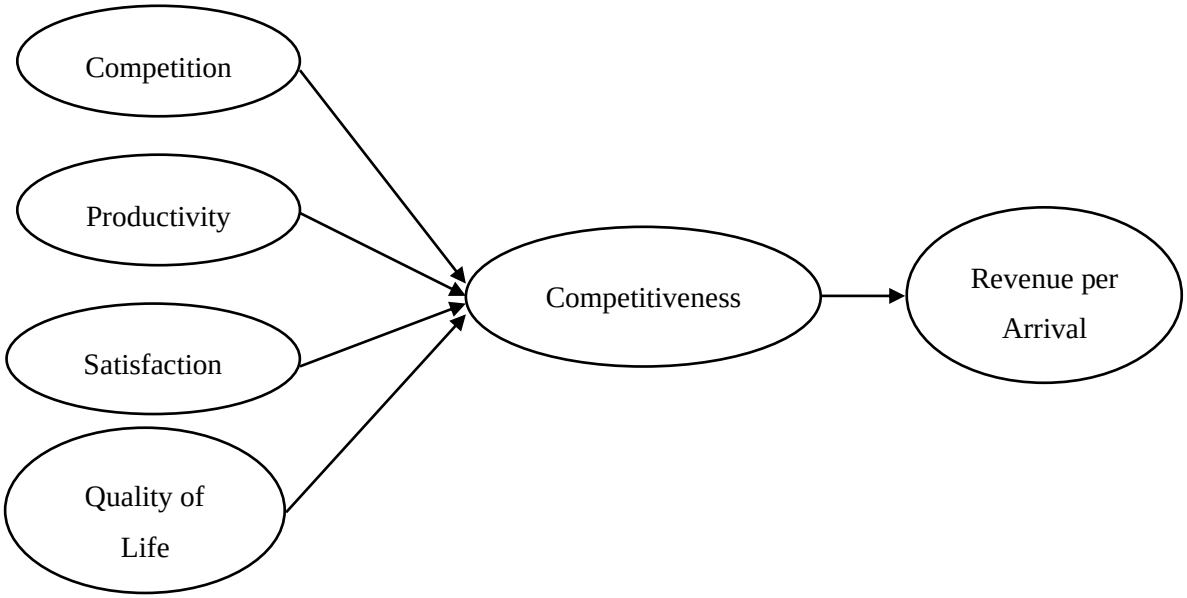
Source: Crouch, R. & Brent, R. (1999). Tourism, Competitiveness, and Societal Prosperity. *Journal of Business Research* 44, 137–152.

Annex II: Dwyer and Kim (2003) Model of Destination Competitiveness



Source: Dwyer, L. & Kim, Ch. (2003). Destination Competitiveness: Determinants and Indicators. *Current Issues in Tourism*, 6(5), 369-414.

Annex III: Croes &Semrad (2018) Model of Destination Competitiveness



Source: Croes, R., & Semrad, K. (2018). Destination Competitiveness. In C. Cooper, S. Volo, W. C. Gartner, & N. Scott (Eds.), *The SAGE Handbook of Tourism Management: Theories, Concepts and Disciplinary Approaches to Tourism* (Vol. 2, pp. 77-90): SAGE Publications Ltd.

Annex IV: Destinations descriptive statistics (Chapter 3, Study 2)

Destinations	GDP_DC		GDP_TC		E_DC		E_TC		DTTS		LTTS		BTTS		VE		ITTC		GI		CI	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Anguilla	17.35	2.01	50.86	5.86	21.53	1.88	59.95	4.5	1.99	0.24	15.86	2.14	1.38	0.25	81.31	4.02	23.72	3.86	13.71	0.16	10.21	3
Antigua and Barbuda	16.75	1.39	62.56	4.08	18.05	1.91	61.89	6.76	3.6	0.83	15.37	1.33	1.11	0.23	71.46	3.55	23.88	2.09	28.31	0.4	38.66	9.15
Aruba	23.84	3.71	73.75	12.01	26.76	4.02	76.34	11.03	3.68	0.72	22.15	3.44	1.46	0.31	41.5	23.61	32	3.73	16.76	0.34	29.51	2.84
Bahamas	19.3	0.84	43.41	1.56	28.35	1.11	53.68	2.18	6.24	0.28	17.31	0.89	1.8	0.18	61.99	3.91	21.96	0.72	10.88	0.17	16.32	2.23
Barbados	11.81	1.08	38.05	2.85	12.8	1.76	39.52	4.83	2.46	0.18	10.26	1.14	1.41	0.25	59.06	3.88	18.31	1.57	15.94	0.22	20.83	2.83
Belize	13.23	1.31	34.89	3.39	11.8	1.1	31.34	2.99	3.73	0.21	10.91	1.14	2.19	0.21	35.08	3.1	14.93	1.19	12.4	0.19	24.88	5.61
Bermuda	5.07	0.59	14.21	1.11	9.5	1.24	18.55	1.77	3.5	0.51	3.78	0.46	1.27	0.14	16.71	3.31	8.58	0.73	7.05	0.09	3.42	1.24
British Virgin Islands	6.95	1.17	23.86	3.88	8.3	1.42	25.49	4.29	2.86	0.27	5.76	1.11	0.98	0.13	21.16	3.91	10.3	1.59	28.22	0.44	17.17	4.4
Cayman Islands	1.86	0.14	5.67	0.41	2.35	0.18	5.79	0.4	2.61	0.1	1.4	0.12	0.44	0.05	8.39	2.81	3.34	0.26	2.04	0.01	4.65	0.95
Colombia	5.4	0.83	13.65	1.72	5.2	0.6	12.95	1.37	2.84	0.22	3.96	0.6	1.36	0.25	17.37	1.31	6.98	0.7	6.19	0.07	4.35	0.84
Costa Rica	2.71	0.46	10.26	1.32	2.5	0.39	9.42	1.17	2.7	0.2	2.48	0.45	0.13	0.03	18.57	5.87	5.63	0.84	5.78	0.08	16.01	3.71
Cuba	5.13	0.7	16.3	1.99	4.89	0.71	15.61	1.98	2.87	0.13	4.71	0.67	0.34	0.06	36.47	2.59	9.44	0.96	21.42	0.47	3.13	0.37
Dominican Republic	9.29	1.49	28.7	4.3	8.27	1.36	25.79	3.91	2.72	0.16	7.62	1.18	1.62	0.35	52.2	4.47	14.45	2.15	6.16	0.08	13.63	3.42
Dominica	3.59	0.54	8.84	1.14	3.18	0.49	7.93	1.05	3.39	0.58	2.47	0.42	1.11	0.24	14.91	2.7	5.06	0.76	2.58	0.04	9.77	1.73
El Salvador	5.78	0.53	19.67	1.66	5.37	0.53	18.16	1.65	2.46	0.22	4.11	0.42	1.58	0.26	44.56	4.47	9.36	0.81	12.08	0.13	9.26	3.85
Grenada	2.26	0.3	11.14	0.8	2.84	0.55	11.41	0.94	2.32	0.17	1.86	0.28	0.21	0.02	40.66	6.03	4.94	0.69	10.4	0.12	6.32	2.3
Guadeloupe	3.33	0.36	8.61	0.84	2.8	0.21	7.45	0.59	3.28	0.42	2.3	0.15	1	0.22	12	1.34	4.59	0.46	4.66	0.07	6.69	2.22
Guatemala	2.8	0.42	7.83	1.09	3.07	0.54	8.35	1.23	2.9	0.4	2.32	0.43	0.43	0.12	5.53	1.18	3.32	0.4	6.02	0.11	5.27	4.22
Guyana	2.65	0.69	7.53	2.05	2.27	0.55	6.64	1.71	2.35	0.3	2.07	0.62	0.57	0.08	31.18	9.87	5.05	1.03	2.98	0.01	3.51	1.53
Haiti	5.72	0.21	15.09	0.58	4.94	0.17	13.3	0.48	6.74	0.42	2.96	0.09	2.72	0.18	7.66	1.32	6.26	0.3	4.07	0.06	8.23	1.24
Honduras	8.63	0.61	27.73	1.68	7.91	0.46	25.49	1.36	4.37	0.47	7.24	0.57	1.26	0.28	48.17	5.66	13.59	1.19	16.91	0.19	9.45	2.29
Jamaica	2.69	0.38	11.23	1.28	3.13	0.39	11.68	1.22	2.72	0.2	2.21	0.34	0.32	0.1	34.98	4.2	4.94	0.5	7.73	0.09	4.25	0.87

Martinique	6.94	0.26	14.89	0.57	7.96	0.56	16.64	0.94	9.96	0.2	6.01	0.25	0.88	0.23	4.56	0.81	8.65	0.29	1.22	0.02	2.58	0.6
Mexico	4.53	0.43	8.88	1.01	4.41	0.64	8.69	0.9	4.59	0.53	3.79	0.3	0.73	0.13	11.7	2.27	5.46	0.4	2.12	0.03	2.88	1.12
Nicaragua	5.4	1.17	13.16	2.84	5.53	1.61	13.01	3.43	2.69	0.21	4.33	1.25	1.04	0.19	15.18	4.81	7.34	1.22	4.9	0.07	6.86	1.05
Panama	2.39	0.19	6.73	0.73	1.97	0.18	6.02	0.65	2.93	0.08	2.05	0.17	0.33	0.03	5.25	0.56	4.47	0.27	4.23	0.08	10.93	4.4
Puerto Rico	7.29	1.72	27.09	4.72	7.37	1.69	26.38	4.62	2.81	0.23	5.76	1.84	1.39	0.17	41.86	10.81	12.1	2.75	14.37	0.18	14.53	2.79
St Kitts and Nevis	14.14	2.63	40.67	6.97	20.78	3.06	45.37	6.65	3.78	0.6	12.56	2.54	1.34	0.47	59.81	6.96	20.27	3.06	9.77	0.12	21.02	3.36
Saint Lucia	7.04	1.31	24.1	3.47	6.46	1.15	22.04	3.13	2.96	0.4	5.49	1.05	1.45	0.29	52.03	2.56	11.85	1.91	12.04	0.13	16.01	3.17
St. Vincent and the Grenadines	1.67	0.72	4.16	1.92	1.7	0.83	4.17	2.1	1.33	0.34	1.05	0.48	0.61	0.26	4.75	1.75	2.51	0.73	1.71	0.02	1.84	0.83
Suriname	2.94	0.66	7.66	0.99	4.42	0.47	10.19	1.09	2.84	0.76	2.12	0.49	0.81	0.21	5.08	1.2	4.31	0.61	0.16	0.06	10.9	0.29
Trinidad and Tobago	27.86	4.37	78.69	11.75	28.54	2.71	79	6.68	3.13	0.54	26.64	4.2	1.1	0.28	55.26	7.96	36.47	5.48	27.24	0.42	15.27	2.38
Venezuela	3.31	0.18	8.9	0.48	3	0.21	7.89	0.52	5.7	0.31	2.6	0.19	0.67	0.2	1.76	1.13	4.99	0.26	3.52	0.05	4.61	0.84

Source: Author's own.